The International Journal of
Orthodontia, Oral Surgery and Radiography
(*All rights strictly reserved*)

VOL. IX ST. LOUIS, JUNE, 1923 No. 6

ORIGINAL ARTICLES

REPORT ON SOME MODELS OF CASES FOR THE MUSEUM*

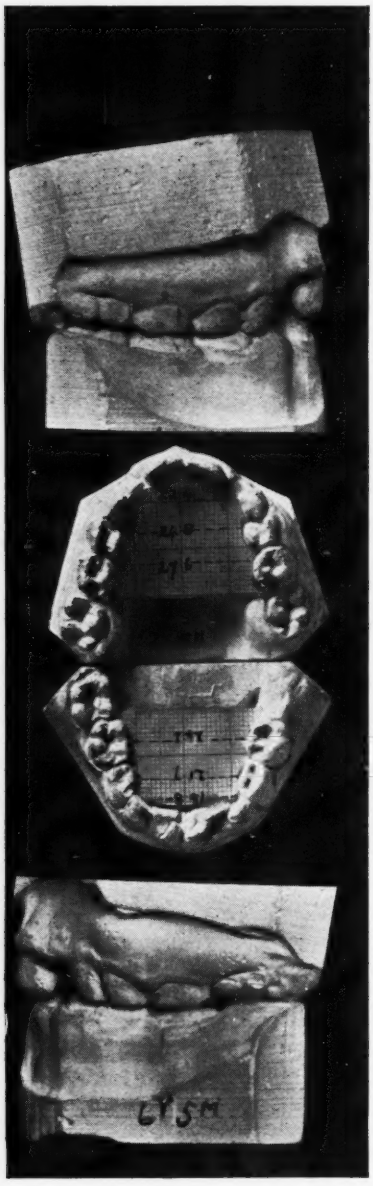
BY B. MAXWELL STEPHENS, L.D.S. AND GEO. G. CAMPION, L.D.S.

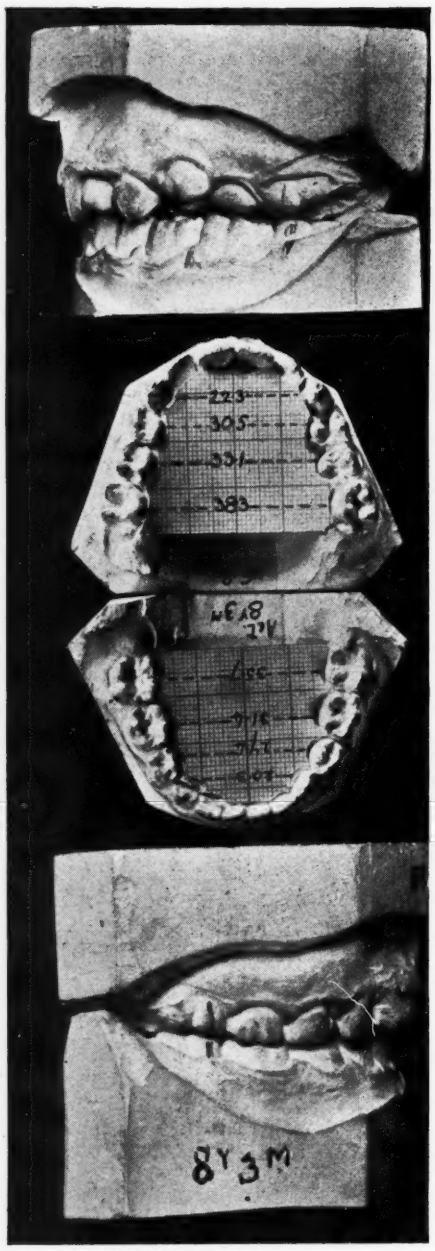
HUXLEY once published a volume of essays which he entitled "Methods and Results." In orthodontics during the past quarter-century many books and papers have been published giving quite adequate accounts of methods and quite inadequate accounts of results, and this inadequacy in dealing with results is largely due to a failure to discriminate between immediate results and final results, and yet between these two lie all the phenomena embraced under the term "Relapse." The final results of many cases have often been given in terse admissions that while they were quite successfully treated they turned out in the end failures owing to the occurrence of relapse. If this be so it would seem that one of the ways of advance in the future lies actually in the study of relapse, so that with more ample knowledge of the conditions and factors which bring it about, we may collectively be enabled to apply methods under those conditions which minimize it as far as possible.

It was with something of this in mind that the Council about two years ago invited members to contribute models and other data of cases which had been treated, including the results obtained, but made it at the same time a condition that no case should be accepted which did not show the conditions of the dental arches at least two years after all retention appliances had been discarded. It was considered that in the two years following the removal of all retention appliances any relapse which was imminent would have had time to show itself.

We present this evening the results of a detailed examination of four cases. Of these, two were contributed by Mr. Chapman, one by Mr. North-

*Delivered to the British Society for the Study of Orthodontics, January 16, 1922.





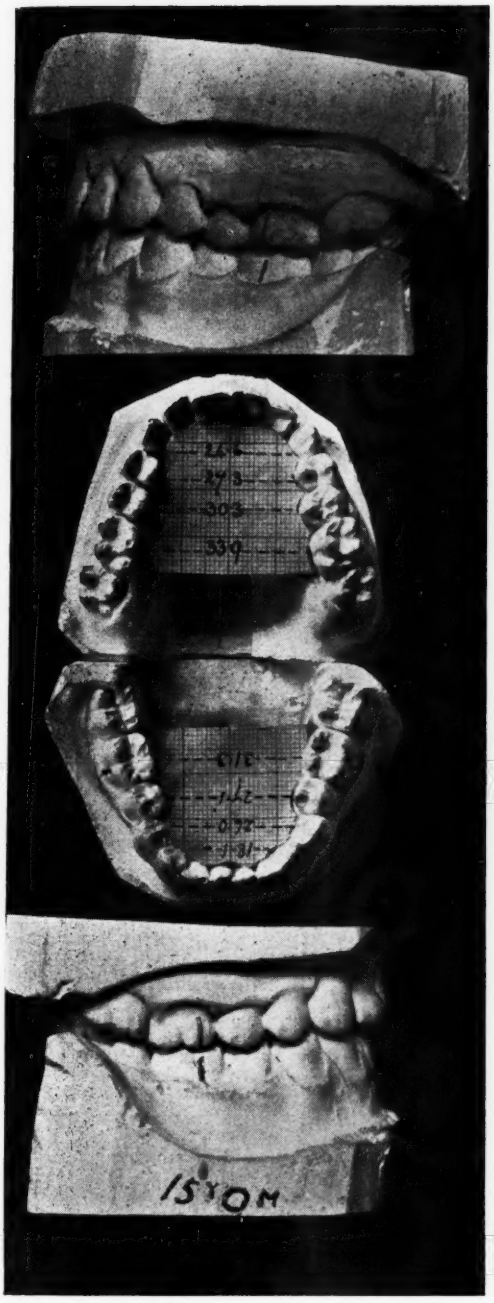
REPORT ON SOME MODELS

HAROLD CHAPMAN CASE 28. TABLE I

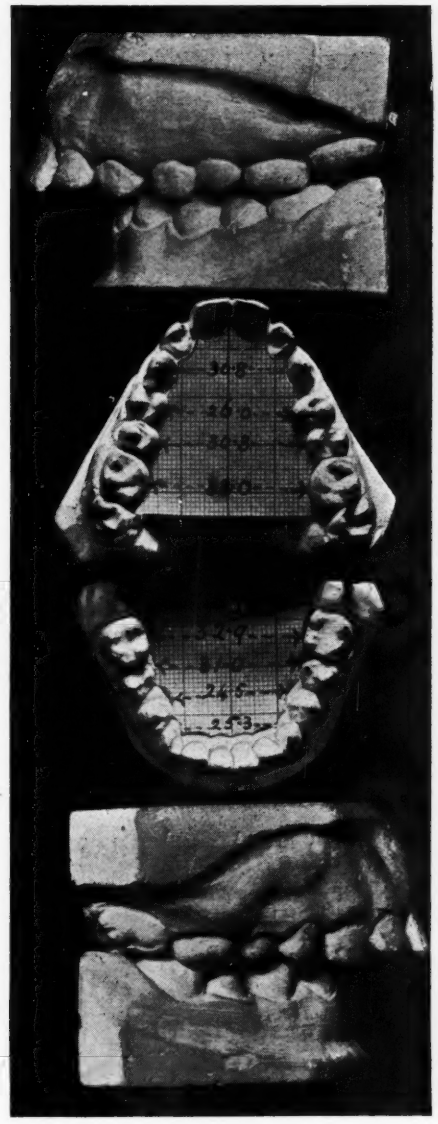
Arch measurements between		Sept. 26, 1911. 6 yrs. 5 mths.	July 30, 1913. 8 yrs. 3 mths.	Jany. 7, 1921. 15 yrs. 9 mths.	Expansion.	Relapse.	Residual Expansion.
UPPER.	C & 3	22.4	22.3	24.6	—	—	—
	D & 4	24.8	D | 4 30.5	27.3	5.7	3.2	2.5
	E & 5	27.6	E | 5 33.1	30.3	5.5	2.8	2.7
	6 & 6	—	38.3 ∧	33.9	—	?	—
LOWER.	C & 3	16.8	20.3	18.1	—	—	—
	D & 4	21.7	27.4	26.0	5.7	1.4	4.3
	E & 5	24.2	31.4	27.1	7.2	4.3	2.9
	6 & 6	—	35.7	31.3	—	4.4	—

Sept. '11. 6 years 5 months. Lower expansion (Highton).
Nov. '11. 6 years 7 months. Upper expansion (Badcock).
Jan. '12. 6 years 9 months. Lower Badcock.
May '12. 7 years 1 month. Retention *plates*. Lower with springs to push out 2|2
July '12. 7 years 3 months. Band on 1 | to rotate it.
July '14. 9 years 3 months. Retention plates discarded.
Jan. '21. 15 years 9 months. Final models.

Treatment = 8 months.
Retention = 2 years 2 months.



Case 28 (1)
Mr. Harold Chapman.



Case 3
Dr. Baker.

croft, and the fourth is one of several series of models presented to the Society some years ago by Dr. Bogue.

Of these four cases three of them present irregularities associated with narrow arches with normal or subnormal mesiodistal occlusion, and are of the kind often known as those of Angle's Class I. The fourth case, that presented by Dr. Bogue, is a case where the upper incisors are thirteen milli-

CASE 1.

Arch measurements between		Sept. 26, 1911 6 yrs. 5 mths.	July 30, 1913 8 yrs. 3 mths.	Jany. 7, 1921 15 yrs. 9 mths.	Expansion	Relapse	Residual Expansion
UPPER	C & 3	22.4	22.3	24.6	—	—	—
	D & 4	24.8	$\frac{D \mid 4}{30.5}$	27.3	5.7	3.2	2.5
	E & 5	27.6	$\frac{E \mid 5}{33.1}$	30.3	5.5	2.8	2.7
	6 & 6	—	38.3 ^	33.9	—	?	—
LOWER	C & 3	16.8	20.3	18.1	—	—	—
	D & 4	21.7	27.4	26.0	5.7	1.4	4.3
	E & 5	24.2	31.4	27.1	7.2	4.3	2.9
	6 & 6	—	35.7	31.3	—	4.4	—

HAROLD CHAPMAN. CASE 28.

Sept. '11. 6 years 5 months. Lower expansion (Highton)

Nov. '11. 6 years 7 months. Upper expansion (Badcock)

Jan. '12. 6 years 9 months. Lower Badcock

May '12. 7 years 1 month. Retention *plates* Lower with springs to push out at $\frac{2 \mid 2}{}$

July '12. 7 years 3 months. Band on $1 \mid$ to rotate it.

July '14. 9 years 3 months. Retention plates discarded.

Jan. '21. 15 years 9 months. Final models.

Treatment = 8 months.

Retention = 2 years 2 months.

CASE 2.

Arch measurements between		Oct. 30, 1912 8 yrs. 7 mths.	April 7, 1913 9 yrs. 1 mth.	July 28, 1915 11 yrs. 4 mths.	Jan. 19, 1920 15 yrs. 10 mths.	Expansion	Relapse	Residual expansion
UPPER	C & 3	<38.4	40.7x	—	41.5x	—	—	—
		27.0	29.5	^	25.7	—	—	—
	D & 4	28.5	31.2	30.5	29.1	2.7	2.1	.6
	E & 5	30.6	34.0	34.5	34.0	3.9	.5	3.4
	6 & 6	34.0	37.5	35.6	36.6	3.5	.9	2.6
		$\frac{c \mid c}{}$	$\frac{c \mid c}{}$	$\frac{3 \mid c}{}$	$\frac{3 \mid 3}{}$			
LOWER	C & 3	19.7	22.0	20.0	18.3	—	—	—
	D & 4	23.7	26.0	27.3	26.0	3.6	1.3	2.3
	E & 5	27.5	30.5	30.5	29.7	3.0	.8	2.2
	6 & 6	33.7	36.0	35.0	35.0	2.3	1.0	1.3

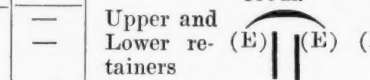
HAROLD CHAPMAN. CASE 82.

Nov. '12. 8 years 8 months. Bucc. arches bands on $\frac{E \mid E}{E \mid E}$

Jan. '13. 8 yrs. 10 mths. I.M.T.

April '13. 9 yrs. 1 m.

Upper and Lower retainers



May '13. 9 yrs. 2 mths. Insert bite plates

Sept. '13. 9 yrs. 6 mths. Upper bite plate and retainer combined

May '14. 10 yrs. 2 mths. New upper bite plate and retainer

July '14. 10 yrs. 4 mths. New upper bite plate and retainer

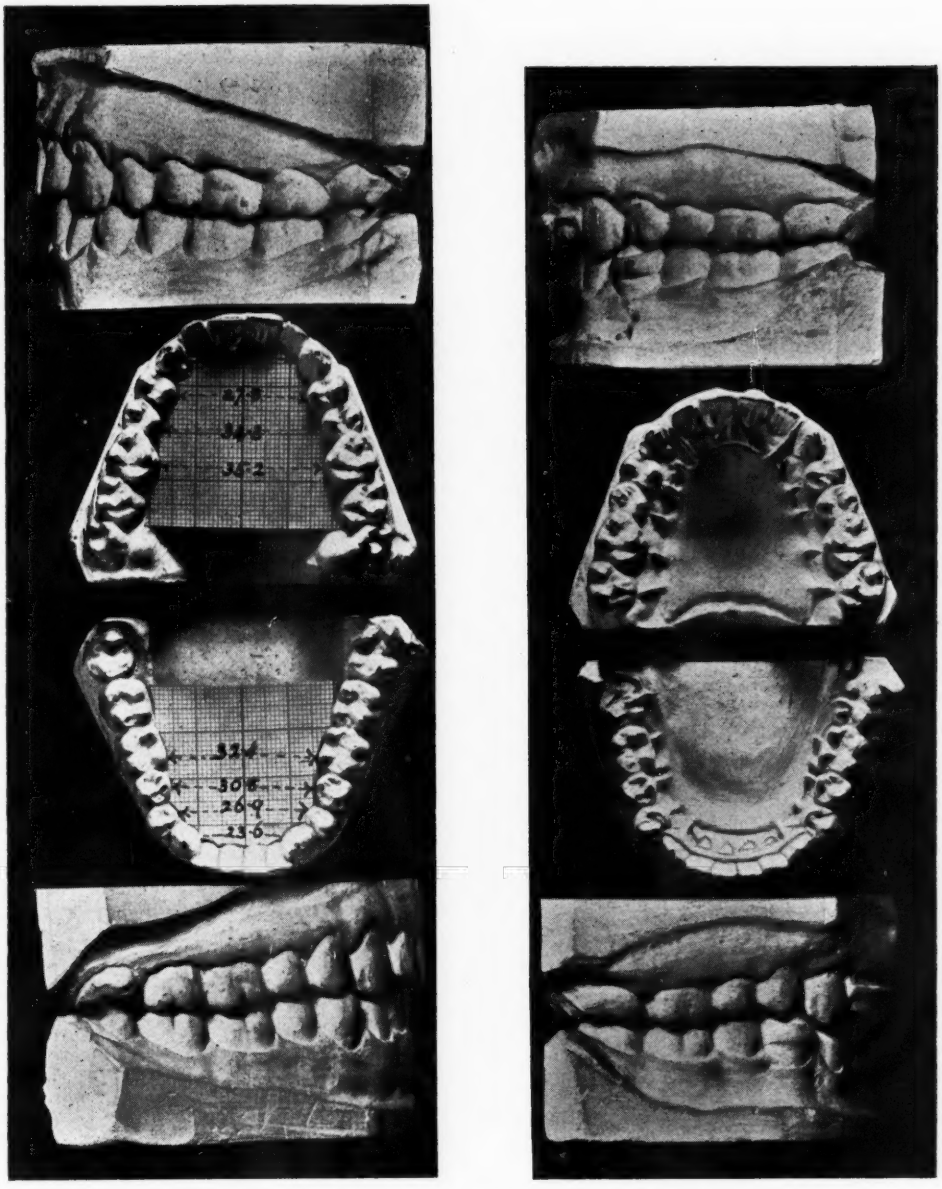
Nov. '14. 10 yrs. 8 mths. Lower vulc. retainer

Aug. '17. 13 yrs. 5 mths. Both retention plates discarded

Jan. '20. 15 yrs. 10 mths. Final models.

Treatment = 6 months.

Retention = 4 years 4 months.



	Arch measurements between	10 years.	15 years.	20 years.	Expansion.	Relapse.	Residual Expansion.
LOWER.	3 & 3	30.8	34.5	31.0	3.7	3.5	.2
	4 & 4	26.0	30.0	27.8	4.0	2.2	1.8
	5 & 5	30.3	35.0	34.3	4.7	.7	4.0
	6 & 6	33.0	37.2	35.2	4.2	2.0	2.2
UPPER.	3 & 3	25.3	26.7	23.6	1.4	3.1	–1.7
	4 & 4	24.5	*29.0	26.9	4.5	2.1	2.4
	5 & 5	31.0	33.6	30.8	2.6	2.8	–.2
	6 & 6	32.9	35.0	32.4	2.1	2.6	–.5

REPORT ON SOME MODELS.

DR. BAKER'S CASE (3).

Stated by Dr. Bogue to be the first case treated by "Baker's Anchorage."

MODELS IN THE SOCIETY'S MUSEUM PRESENTED BY DR. BOGUE.

No details of treatment.

All *canine* measurements have been taken from the tips; the teeth being only about half erupted at date of first models.

(*Measurement estimated retention bands on teeth.)

metres in advance of the lowers and the latter biting on the upper gum. A case of the kind often known as Angle's Class II, Division 1.

Our method of examination has been to measure across the dental arches between corresponding teeth at successive stages of the treatment and over the whole period covered by the models, and we give these measurements in tables. We have noted the expansion brought about under treatment and compared the measurements made of models at the conclusion of treatment with those made of models taken two years or more after all retention has been discarded; this has enabled us to record the amount of relapse which has taken place, and after deducting this and ascertaining how much of the original expansion has been retained, we have called this the residual expansion.

We have in a separate table tried to compare the three cases accompanied with details of treatment with one another, and for this purpose we have taken as a means of comparison the width across the upper arch between the two second temporary molars or their succeeding premolars. We are aware that a difficulty which Dr. Northcroft has pointed out arises here owing to the palato-buccal diameter of the second temporary molar being different to that of the second premolar, but despite this we find the measurement a convenient one for comparing different cases. The results of this are in the table.

No. of Case	Treatment (expansion)			Retention			Date of Final Models	Upper 2nd Premolar		
	Begun	Ended	Duration	Begun	Ended	Duration.		Total expansion	Relapse	Residual expansion
	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.			
1	6 5	7 1	– 8	7 1	9 3	2 2	15 9	3.9	.5	3.4
2	8 8	9 2	– 6	9 2	13 5	4 4	15 10	5.5	2.8	2.7
3	7 11	9 6	1 7	9 6	9 9	– 3	15 3	8.0	3.0	5.0×
4	—	—	—	—	—	—	20 0	4.7	.7	4.0

One of the most interesting facts disclosed is that presented by the alterations in both upper and lower canines in Drs. Bogue and Baker's case. The uppers were expanded 3.7 mm., suffered a relapse of 3.5 mm., and at the age of 20 were only .2 mm. farther apart at the tips than at the age of 10 years. In the lower arch the canines were expanded 1.4 mm., but being afterwards subjected to the pressure in occlusion of the relapsing upper canines, were driven into positions nearer together than they occupied before treatment by 1.7 mm. In contradistinction to this repulse of the canine we find in the same case that the upper second premolars were expanded 4.7

mm., of which they had retained at the age of 20 no less than 4.0 mm., and between these two extremes of expansion and relapse there is a great deal of variation.

Another interesting fact which emerges is that in case 3, one of Mr. Northcroft's, in which he produced an expansion of 8.0 mm., which had relapsed to 5 mm. at the age of 13 years, 4 months, had again expanded 1 mm. by the time the child had reached the age of 15 years 3 months, and this expansion seems to have been general and not confined to the region of the premolars. We regard this as an example of the growth of bone at the intermaxillary suture which was demonstrated at the last meeting by Sir Arthur Keith.

CONCLUSION

It seems to us that the detailed examination of these cases has been well worth while. There has been as yet no generalized study of the relapses which take place after treatment, and the examination of these cases convinces us that such a study would be of great value and might save many of us from recapitulating the mistakes in practice of our predecessors. A museum with models accompanied by data of the kind indicated in this report would be serving the highest function of a museum, the function of research as distinguished from the display of material illustrating knowledge of which we are already assured.

DISCUSSION

Mr. Northcroft, in opening the discussion, said that Mr. Campion had pointed out that his (Mr. Northcroft's) case had been under treatment for one year and seven months and had been retained for only three months. There was a total period of apparatus wearing, of one year and ten months in comparison with some cases which had to be retained for two years, and in other cases four years. Although the expansion seemed to have collapsed, he believed that the occlusal result had been satisfactory; so it did not necessarily follow that because the expansions of a case had partially collapsed the total result became unsightly, or that one should jump to the conclusion that such treatment was undesirable. He thought that with regard to all the cases which had been shown the operators had been fully justified in undertaking the treatment.

Mr. Campion said he was afraid he had not made himself clear. The expansion had not collapsed. It had collapsed a little, but there had been a great expansion left in that case of Mr. Northcroft's. They regarded it as a most successful case. In fact, the very point which they desired to make was that actually in the most successful cases one did get a certain amount of relapse.

Mr. Housden said the point which had struck him was that in Mr. Chapman's case the treatment had lasted for quite a short period but in Mr. Northcroft's case the treatment had lasted much longer and the result had been ever so much better, although it was retained for a shorter period. Mr. Chapman's case had been retained for four years and Mr. Northcroft's case for three months, yet the main result had been much better. It pointed to the fact that the more slowly the teeth were moved the better they were retained in their new positions.

Mr. Pitts remarked that Mr. Campion had referred to Mr. Northcroft's observation that the palato-buccal diameter of the deciduous molars varied from that of the premolars. That, of course, must make a difference in measurement across the palates of the same cases at different ages. It struck him that one way of getting over that would be that if a very large number of sections of the palato-buccal and of the antero-posterior diameters were made of the deciduous molars and premolars were made not necessarily from

the same mouth, and those measurements compared, it would be possible to get an average index figure of the difference, which could be used as a correction in making measurements of those cases. Unless one did something of that sort, one might get a failure, particularly where expansion was, after all, only measured in millimetres.

Another small point which had struck him was that he noticed that the measurements were taken from the anterior corner of the teeth.

Mr. Campion said that was not so; it was simply an error.

Mr. Pitts said in the case of the second deciduous molars in the upper jaw there was very frequently a well-marked accessory cusp; and a measurement taken in that region, again, would make an additional error in comparing the palatal results.

Mr. Rushton said the paper bore out what most practitioners had found in their experience, namely, that in cases of expansion sooner or later the teeth seemed to tend to go back to their pristine condition. He had seen a case the other day which had been satisfactorily expanded many years ago. The patient was now about 21. It still showed it was well worth while expanding those arches and making those teeth regular; but the fact remained that those teeth tended to go back to the irregular position in which they were when the case was first seen. There was another case he had in mind in which a central incisor was prominent, and which had been put back into position when the girl was quite a child. She was now a woman of over 30, and her tooth still tended to come forward, and she still wore a retention plate every night of her life. If she did not, that tooth would go forward. In cases in which extraction had been performed, one did not get those relapses; one might be pretty certain that the teeth, when they were once put into their proper positions and given a proper amount of room to keep their positions, would retain them. Very often those cases could be done without any appliance whatever, and were most satisfactory and permanent in every way.

Mr. Chapman said he thought the Society had been justified in appointing Mr. Campion and Mr. Maxwell Stephens to go through the cases which had been submitted to them. To his mind they had undoubtedly presented the results of treatment in a form which the members had not had an opportunity of seeing before, and he thought the analysis had probably been as startling to the persons who had done the treatment, as it had been to those who had investigated it. He would like to express his thanks to both gentlemen for the great amount of time and labor which they had put into the cases, and for showing the members what had really taken place.

With regard to the details of the treatment, of course they must necessarily be brief when tabulated in the form in which they had been shown; but he must say that personally he believed in retaining such cases for a very long time—not necessarily saying that the patients should wear their retention for every twenty-four hours till the end of the treatment, as might be inferred from the tables exhibited, but only for a portion of each twenty-four hours. So that it was necessary to be a little careful in exactly interpreting what they had been shown on the screen. Nevertheless, it was a revelation to see that there was such a large amount of relapse and such very little residual expansion.

Mr. Campion in his opening remarks had referred at length to the question of relapse, and he (Mr. Chapman) had been extremely interested in that. In July of last year he had seen a patient of about 16 years of age who had been treated not in this country at all, but by a very good orthodontist, a man who did excellent work. Although he had never met him, he had seen a considerable amount of his work. The original condition of the case he (Mr. Chapman) did not know. As far as concerned the occlusion now, the result was perfect, but the patient appeared to be all teeth, and there seemed to be no evidence of any relapse at all. The mother of the child was greatly perturbed at her appearance, and wanted to know whether anything could be done to reduce the appearance of the teeth. He had not given any definite opinion. They were leaving for the Continent the next day or very shortly after; but he had not been able to bring himself to advise them to have the premolars or any other teeth removed because he did not feel confident that the relapse, which had been seen on the screen, would take place in that particular instance. In private

conversation he had heard that Mr. Northcroft had also seen the case, so that he would be able to supplement any remarks he himself had made about it.

In the same connection, in a case of his own in which he had brought about a considerable amount of expansion, there was not yet quite room for all the teeth; but the expansion was so severe, if he might use that expression, that he had not felt justified in going any further. In fact he had felt he ought to do something to make it less, and to remove, say, two premolars; but there, again, one was faced with the difficulty as to whether a relapse would occur in a case in which it was desired. He merely mentioned that to show that there seemed to be another aspect of the matter, and that the residual expansion might, at times, be greater than anticipated.

Mr. Schelling said in regard to Mr. Chapman's case, where the patient appeared to be "all teeth," it might possibly be something to do with the amount of fatness or thinness of the patient's face. Many years ago he had made two complete sets of teeth for a lady of 60. She looked very well with them, and as she got older he did not notice any difference. Then he did not see her for ten years, and he was really horrified at the appearance of the old lady; she seemed "all teeth." He took out a bicuspid on each side in upper and lower jaws, and put the front teeth back, and she then presented a normal appearance. Shortly afterwards he had met a friend of his with his mother, also a lady of 80, and who also presented exactly the same appearance of "all teeth." His friend was a professional man, so he mentioned to him that he had seen a similar case and the fact that he had removed a bicuspid in each of the plates. His friend replied that that was all very well, but that his fortunate mother had all her natural teeth still!

Mr. Chapman said the patient to whom he had referred could hardly be described as thin.

Mr. W. J. May said he had been interested in the remarks about the patient with one central incisor, for he had seen an exactly similar case in a child. He was the second practitioner to treat the case. The incisor had been brought back into his place, having been retained by a band for six months, and then with a plate. There was no reason that he could see why it should not stop there, but directly the plate was removed the tooth came forward again.

With regard to Mr. Chapman's case, he also was treating a child at present who might certainly be described as "all teeth." The child was about 11 years of age when he first saw her, and he had decided to remove a premolar on each side. He hoped to show the result later on; at any rate, it was going on very well indeed. He had had to expand the arch, and the expansion had not relapsed.

The President said the members were much indebted to the authors for the work they had done. He hoped the members would supply them with more material so that their studies might be continued, and that the authors would be willing to continue their investigations.

He had been hoping that some members would have referred to the question of the canines. Mr. Campion would not claim that the results already brought before the Society were sufficient to warrant a certain line of action; but when the photographs showed that the canines were about in the same position at the end of the treatment as they were at the beginning—in one case slightly less if anything—it almost seemed to him that orthodontists might save themselves the trouble of trying to move out those upper canine teeth and be content to get an expansion, which had proved so very satisfactory, behind them, further back in the mouth. That might, in a way, be considered a simpler method of treatment, and might be taken into the general survey when mapping out what particular movement should be aimed at at the commencement of the case. It would be very interesting indeed if the members could have further figures and statistics with regard to the action of the canines. So far as the central incisors in the upper jaw were concerned, he thought it was the experience of everybody that if there was any tendency to move at all they would move. There was nothing whatever to keep an upper central incisor into the line. When a lower incisor was pushed forward, it would stop in its place and would not go outside, because it was kept in place by its corresponding incisor in the upper jaw; and

that was where the lower incisors were much more satisfactory to deal with than were upper incisors. So that he did not think anyone would be surprised at finding a tendency for the upper incisor to wander away in a place where there was no resistance, except perhaps the upper lip. If it got out so much that the muscular lower lip should get behind it, then there would be still more trouble.

In returning the members' very sincere thanks to Messrs. Campion and Maxwell Stephens for their communication, he would like to invite from those gentlemen an assurance that they would continue their investigations, and an assurance from the members that they would all promise to furnish the authors with sufficient material.

Mr. Maxwell Stephens, in reply, thanked the members for the reception they had given to their report. He would say that the report should not cause hesitation in taking up expansion as a method of treatment, but rather cause consideration as to the rate at which the expansion should be made, and also the rate of retention.

Mr. Campion and himself would be very pleased to continue their investigations if the members supplied them with material.

With regard to the moving of the central, he had seen a case the other day where the central had protruded again immediately, and the only way in which the practioner could hold it was by making a couple of pits in the lingual surface of one incisor and corresponding pits in the neighboring tooth, and putting in a couple of stout platinum staples. Those staples had been in a matter of ten years, and were perfectly satisfactory. He had thought that that had been a daring and cunning thing to do.

ORTHODONTIC DIAGNOSIS*

By E. Sheldon Friel, M.D., Sc.

IN OPENING a discussion on diagnosis, Mr. Sheldon Friel said he felt rather diffident in doing so because the value of many of the methods he would suggest had not yet been proved. According to the strict interpretation of the title "Diagnosis," one would be limited to identifying cases of malocclusion by their symptoms, etc., but he thought that, for the purposes of practical orthodontics, diagnosis and etiology were so intimately associated it would be a valuable addition to the discussion to introduce some new instruments and methods which had been evolved in order to more readily arrive at correct causations. In order that a rational diagnosis could be made, it appeared essential that a definite system of examination should be carried out in each case, and that the results of that examination should be recorded on a chart. For that purpose he had drawn up a chart that was not so elaborate as the chart adopted by the Society some years ago (Figs. 1 and 2). The examination was divided into three parts: first, the bodily conditions; secondly, the oral conditions; and thirdly, the occlusal conditions. With regard to the bodily conditions, was it possible to discover the degree or extent of nourishment of the child by measuring the weight and height? Prof. Von Pirquet, of the children's clinic in Vienna, had worked out a formula for determining the degree of under-nourishment of children, and called it "pelidici"; it was the cube root of ten times the weight in kilogrammes over the sitting height in centimeters. The formula was diffi-

*Given before the British Society for the Study of Orthodontics, February 6, 1922.

cult to work out, but it had been worked out in the form of a table, so that if one knew the weight and sitting height one could tell at a glance the "pelidici." Where the "pelidici" ranged between 95 and 100 the child was considered normal; when it was below 95 the child was under-nourished, and when it was over 100 the child was over-nourished. That method of examination was used to a large extent in Vienna for the examination of school-children under the American Relief Mission, and although it was not

Name

No. 590.

Age 5 yrs. 9 months

Diet :—

Date Oct. 25 1920

1. First year—Natural, Artificial or Mixed
   If Artificial Nature of Food

Weight 14·2 kilg Height Sitting 53 cms.

Handgrip

Pelidici

Including plaster leg splints

2. First to Sixth year

3. Present diet—Breakfast

Lunch

Dinner

Tea

Sweets and Fruit

4. Character of Mastication (normal, vigorous or feeble)

Maximum pressure between molars, Right — Left

Breathing Normal — Adenoids, etc

Nose

Lips — Max-pressure

Tongue

Habits—(*a.*) Comforters, etc. — Length of time used

(*b.*) Sucking or biting fingers, etc.

General Health, Illness Rickets — 1st tooth erupted 2 years old.

Cannot stand or walk.

Fig. 1.

as good as a thorough medical examination, it seemed to be worthy of consideration. So far he had not examined a sufficient number of children to be able to state what the relation of malocclusion was to a low "pelidici," but he thought there was a relation. It was very probable that a low "pelidici" was a bad prognostic sign for the successful treatment of a case. The second method he would suggest was the use of various forms of dynamometers for testing the strength of different muscle groups, such as the

hand grip, the jaw pressure—the maximum pressure between the jaws at the region of the first molars and between the incisors—the tongue pressure and the lip pressure. Johnson and Hatfield of Boston in a paper published in the *Cosmos* of June, 1917, showed very clearly that there was a relation between normal dentures, the hand grip, and the jaw pressure, and also a relationship between abnormal dentures, the jaw pressure, and hand grip, and that the pressures in the latter cases were considerably lower than in

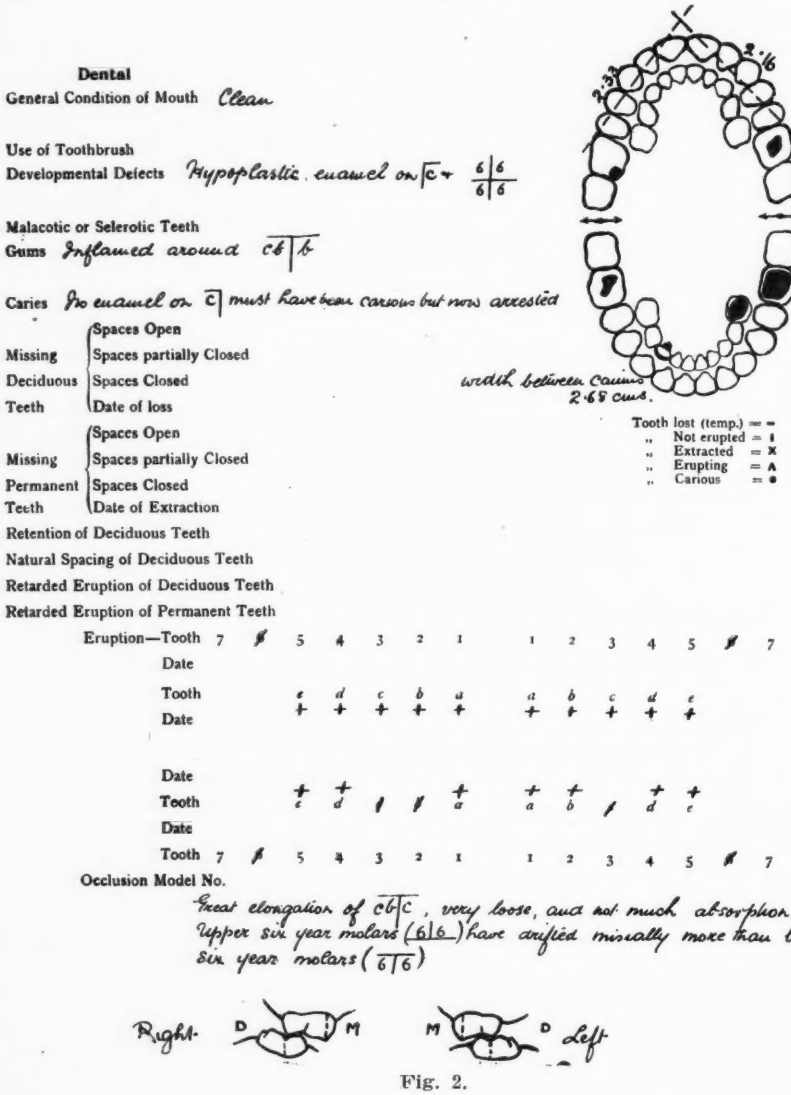

Dental
General Condition of Mouth Clean
Use of Toothbrush
Developmental Defects Hypoplastic enamel on c̄ | c̄ 6|6 / 6|6
Malacotic or Selerotic Teeth
Gums Inflamed around c̄6|6̄
Caries No enamel on c̄ | must have been carious but now arrested
Missing Deciduous Teeth: Spaces Open; Spaces partially Closed; Spaces Closed; Date of loss
Missing Permanent Teeth: Spaces Open; Spaces partially Closed; Spaces Closed; Date of Extraction
Retention of Deciduous Teeth
Natural Spacing of Deciduous Teeth
Retarded Eruption of Deciduous Teeth
Retarded Eruption of Permanent Teeth
Eruption—Tooth 7 6 5 4 3 2 1 1 2 3 4 5 6 7
Date
Tooth e d c b a a b c d e
Date + + + + + + + + + +
Date
Tooth c d a a b d e
Date
Tooth 7 6 5 4 3 2 1 1 2 3 4 5 6 7
Occlusion Model No.
Great elongation of c̄6|c̄, very loose, and not much absorption of roots. Upper six year molars (6|6) have drifted mesially more than lower six year molars (6̄|6̄)
Right D M M D Left
2·16
2·33
width between canines 2·68 cms.
Tooth lost (temp.) = –
" Not erupted = I
" Extracted = X
" Erupting = A
" Carious = ●

Fig. 2.

the former. It was quite possible that there was a definite relationship between all those different muscle groups and that the cause of the malocclusion was much deeper than the oral conditions would lead one to believe. It was possible, too, that a low jaw-pressure and a low tongue-pressure were related to the consistency of the food that was used. Lip pressure was undoubtedly low in cases of mouth-breathing, but whether the lip pressure was the result of the mouth-breathing or the mouth-breathing the result of the low lip pressure was a matter for consideration.

The slide (Fig. 4) showed one of the graphs taken from Johnson and Hatfield's paper in the *Cosmos.* The two top curves denoted the biting pressure on the molars right and left of 130 boys with normal dentures; the two curves A and B were the hand-grip pressure of the normal denture children; curves M and N were the jaw pressures of the children with the abnormal dentures, (about 230 children), and curves E and F were the hand grip of the abnormal children. It would be seen that there was a definite relationship between the different pressures. Although the hand grip was not very much lower than the normal hand grip there was a difference of several points.

The next slide showed the hand-grip dynamometer. It was an illustration taken from Johnson's paper of Smedley's hand-grip dynamometer. The advantage of that instrument was that the relationship between the hand pieces could be altered so as to accommodate different sized hands.

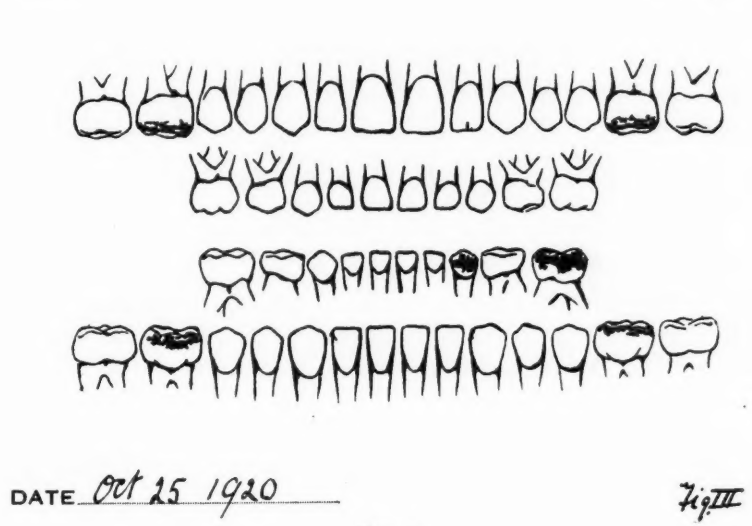


Fig. 3.

The next illustration (Fig. 5) showed the jaw dynamometer. Two lead bite blocks were fitted on to the ends of the steel levers at A and A1. New blocks were used for each test. The instrument registered up to 130 lbs.

The next illustration (Fig. 6) was that of a very embryonic instrument for the purpose of testing the strength of the tongue, but it would only test it in one direction, the pressure of the tongue towards the hard palate behind the upper incisors. The teeth pieces or blocks A and A1 were held firmly between the teeth, and the tip of the tongue was pressed against the tongue piece B, the maximum pressure was recorded on the dial. The tongue was an extraordinarily difficult organ to test or measure in any way, but possibly this instrument would be useful.

The next drawing was that of a lip dynamometer (Fig. 7). The teeth were held together and the two removable lip pieces A and A1 were placed between the lips, and the child exerted the maximum pressure between the lips and the pressure was recorded on the dial.

It was possible that those methods might be of great help in coming to a correct diagnosis of cases of malocclusion.

The next illustration (Fig. 1) was one side of the chart of which he had spoken; this particular chart was filled up for a child that he examined in one of the hospitals in Vienna.

Where possible he endeavored to get the diet of a child from infancy to see whether the diet for the first six months was natural, artificial, or mixed,

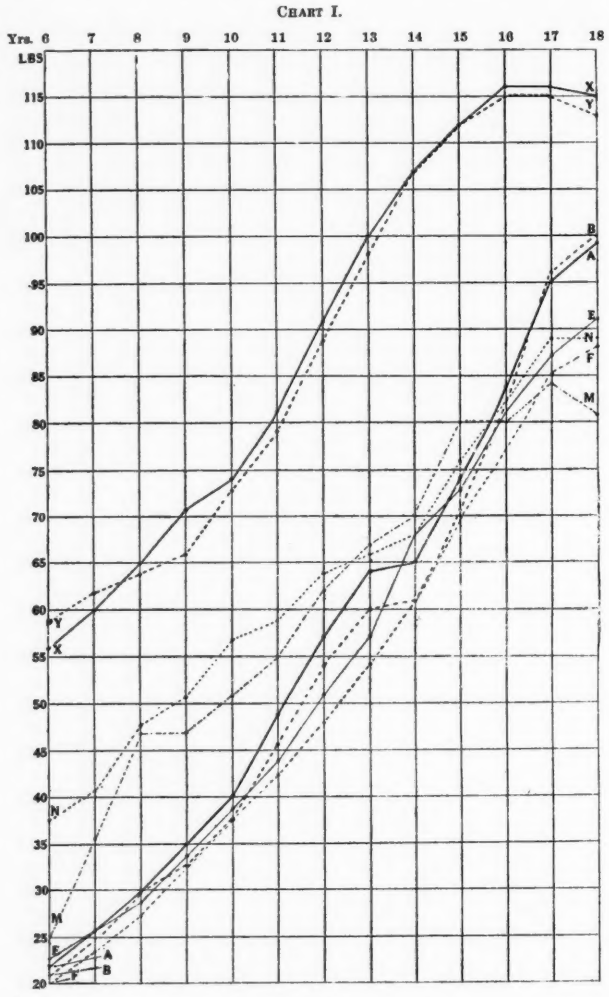


Fig. 4.—From the *Dental Cosmos*, June, 1917.

and also the nature of the artificial food, and finally the present diet of the child. If a parent was asked what the child's present diet was no very satisfactory answer was obtained, and he thought it was better to ask the parent to write down everything the child ate for a week and the quantity, which gave a much better idea of the type of diet. The form of breathing, whether affected by adenoids or enlarged tonsils, and information with regard to habits and diseases, were all important.

With regard to the oral conditions, he thought it was important to note whether any developmental defects of the enamel were present, such as hypo-

plasia or white patches. For that purpose he had a chart (Fig. 3) on which he marked the extent and form of hypoplasia or white patches and the affected teeth.

The next illustration (Fig. 2) showed the other side of the chart. It was important to note the general condition of the mouth, whether it was clean;

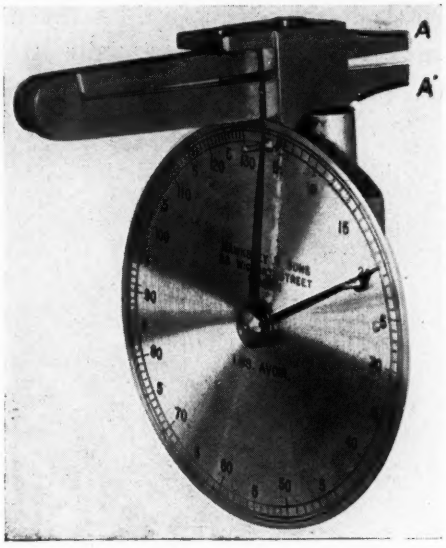


Fig. 5.

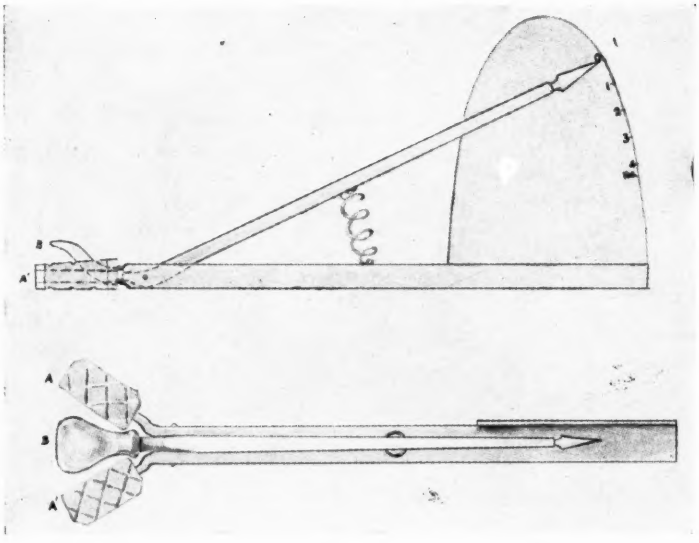


Fig. 6.

to note the state of the gums, whether there was inflammation or recession of the gums, and to note the extent and type of caries. With regard to the oral conditions, it was important to note the date of the eruption and loss of the permanent and temporary teeth. It was difficult to obtain any information as to the date of the eruption of the teeth, and all one could do was to mark down the age of the child, what teeth were present and what teeth

had been prematurely lost, that was to say, whether temporary teeth had fallen out prematurely without their successors appearing. The particular child on the chart has very bad rickets. She had her two first permanent molars present and no other upper teeth at all. In the lower jaw she had the two first permanent molars and a deciduous canine and lateral on one side and a canine on the other side present.

With regard to occlusal conditions, besides the use of photographs and models there was a large number of instruments used for determining the

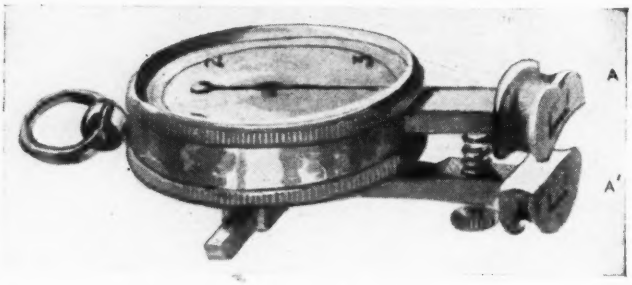


Fig. 7.

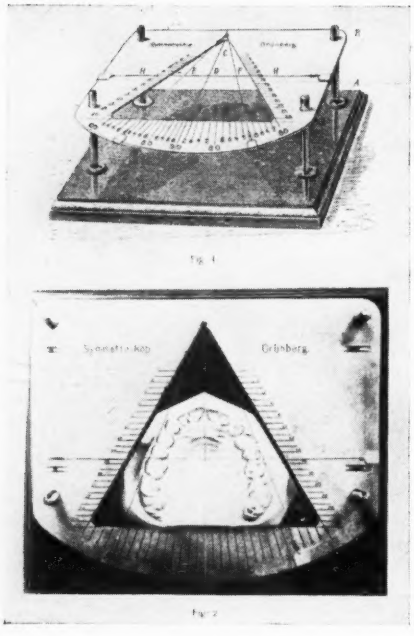


Fig. 8.

amount of drifting of teeth, usually following premature losses, instruments for determining the amount of growth forward of the arches, and instruments that were used for predetermining the shape of the arch. With regard to the instrument used for determining the amount of drifting and direction of drifting, there were such instruments as the prosopometer, which measured the distance from the external auditory meatus to any particular teeth, and showed whether one tooth had drifted in a particular direction in relation to the similar tooth on the other side. It was a difficult instrument with

which to get accurate readings, on account of the looseness of the external auditory meatus in the living subject, and he had not had very great success with it. The second instrument was Grünberg's symmetroscope (Fig. 8), an instrument for determining the symmetry and asymmetry of the arch. The model was inserted within an isosceles triangle and, according to Grün-

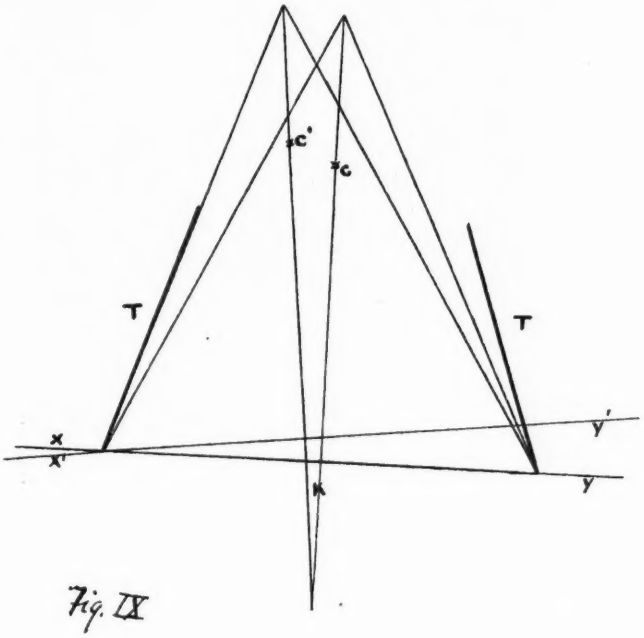


Fig. IX

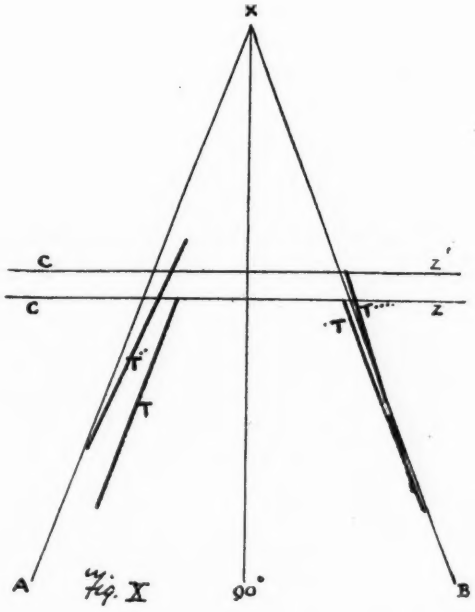


Fig. X

berg's instructions, the line which bisected the apex of the triangle must pass through the central incisors and the side lines which formed the apex must touch similar points on similar teeth, and then any line that crossed the perpendicular line at right angles would show whether one tooth was

on the same level as the similar tooth on the other side. There were some faults in the instrument, two of which were very important, but they could be remedied. One occurred in cases where the centre, between the central

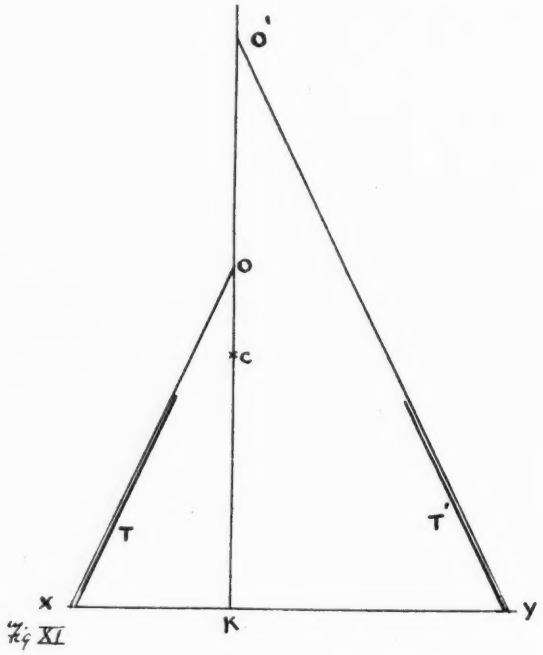


Fig. XI

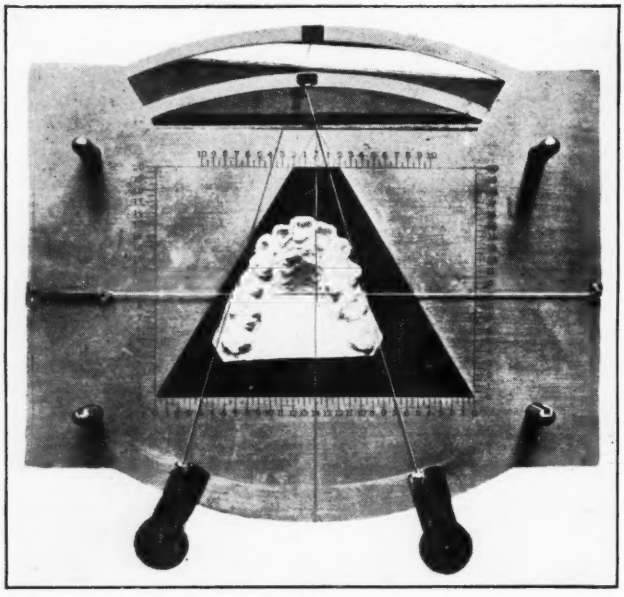


Fig. 12.

incisors, had drifted to one side. In the diagram (Fig. 9) T and T1 represented the molars and premolars in normal position. C represented the centre, between the central incisors, but had drifted to C1. In order to carry out Grünberg's instructions of having the centre line (90° line) passing between the central incisors and the side lines touching similar points

on similar teeth, the model would have to be twisted so that the centre line (90° line) was no longer in parallel to the medium plane of the jaw, and one would get an apparent drifting forward of the teeth on one side.

The second type of case where an incorrect reading was obtained was where one side was in lingual occlusion, but the centre, between the central

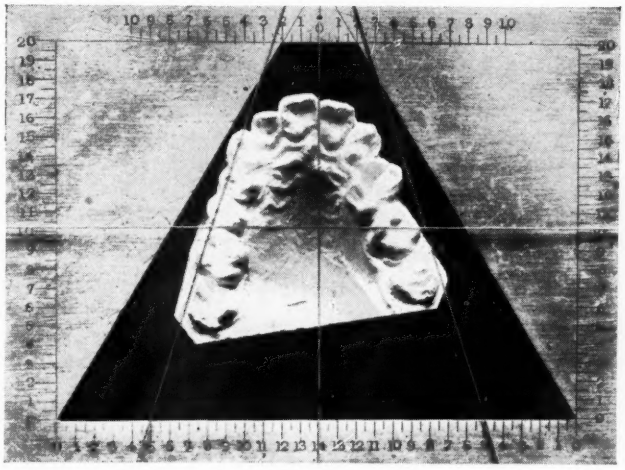


Fig. 13.

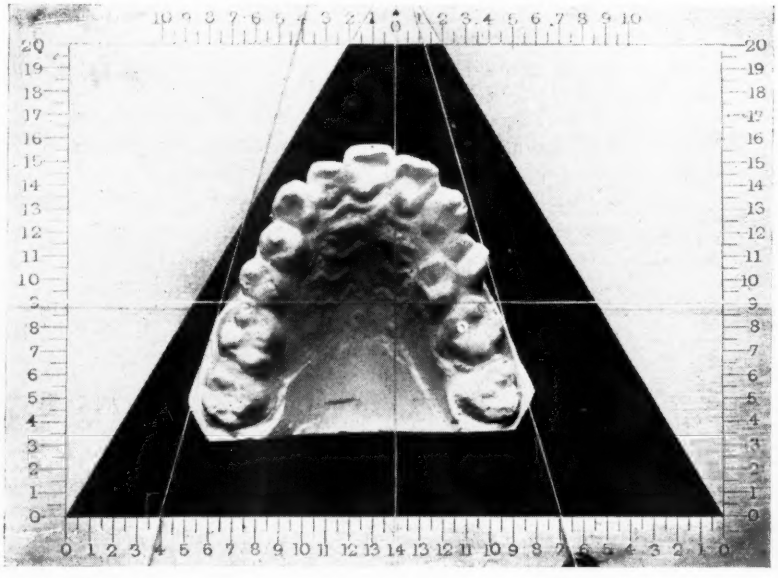


Fig. 14.

incisors, was normal. Diagram (Fig. 10) showed the molars and premolars T and T1 in normal mesio-distal relation but T in lingual occlusion. The centre C normal. In this case it was impossible to have the 90° line passing between the central incisors and not to twist the model so as to have the side lines touching similar points on similar teeth. The carrying out of Grünberg's instructions would lead one to believe that T had drifted forward to T11. If it were possible to move in the side line parallel to the

lingual occlusion of the teeth, as in Fig. 11, it would then be possible to obtain a correct reading in both these types of cases. Fig. 12 illustrated the modified symmetroscope and Figs. 13 and 14 illustrated the difference of the reading with Grünberg's symmetroscope and the modification respectively in one case.

The second class of instrument for showing the amount of growth forward of the jaw was the prosopometer, but it had the same disadvantage he had mentioned before.

Instruments for predetermining the shape of the arch were Hawley's charts and Stanton's odontographs and various other instruments, which could be seen mentioned in American journals. They were nearly all based on the width of the various teeth, Hawley's charts being based on the width of the centrals or the combined width of the centrals, laterals, or canines, and from that he predetermined the shape of the arch. There was a good deal of controversy as to the value of those particular instruments, and such writers as Hellman threw great doubt on their usefulness. He (Hellman) was not able to predetermine the shape of monkeys' arches, and little proof had been brought forward in support of the different instruments.

He had only touched on the very fringe of diagnosis, but in conclusion there was one point he would like to make, and that was that it might be of more importance to study the bodily conditions rather than the mere plaster cast in order to arrive at a correct diagnosis.

DISCUSSION

Mr. J. Sim Wallace said the paper might apply in many ways not only to diagnosis but to etiology. The etiological part in which he was interested was the general condition of the child, which he believed was associated with a general tendency towards irregularities and the lack of power in the muscles. He believed his own jaw was once more or less normal, and it used to be a trick of his with other students at the University to test his grip, and he remembered that he could always put the dynamometer higher than the others. He could only congratulate Mr. Friel on having brought diagnosis a stage further and a stage more accurate than it had been in the past.

Mr. J. Lewin Payne said he felt hardly competent to discuss the particular instruments and methods that had been presented that evening, but he had to congratulate Mr. Friel upon the work which he had been doing and to thank him for bringing forward this new information. He would like to enlarge, if he might do so, the scope of the discussion in regard to diagnosis generally. As Mr. Friel had already said, it was a very important phase; it was the most important of all phases in practice, and at the same time from the point of view of the orthodontist it was probably the most difficult. The question might be asked as to how a diagnosis was made. It was a complex and not a simple process and it really depended on three things: first, personal observation; secondly, physical examination, and thirdly, a clinical investigation. In making a diagnosis of any general condition the surgeon must begin by inquiring about symptoms and the length of time those symptoms had lasted and the order in which they appeared; he found out something concerning the patient's constitution, mode of life, and family antecedents, and that information constituted the history. Mr. Friel's charts had well indicated the way in which that branch of the subject could be approached. Then with regard to the physical examination it was necessary to look carefully at the region to which the trouble was referred, and at the same time consider the condition of all surrounding parts, and sometimes parts remote from that to which attention had been called. In that physical examination the observer took into account what he saw, what he felt and what he heard. The diagnosis was usually

made from the information derived from those three sources; but if there was still any doubt the inquiry could be followed up by means of clinical investigation, and so in the consideration of orthodontics personal observation, physical examination and clinical investigation should be the line of procedure in dealing with such deformities. But before an adequate diagnosis of abnormal conditions could be made, it was essential to be absolutely familiar with that which was normal, to know the shape, size and movements of the jaws and arrangements of the teeth, and also to have intimate acquaintance with the method of growth and classification of the jaws and of the other bones upon which they particularly depended. Moreover, in order to obtain an accurate discrimination it was essential to have a satisfactory classification of the various types of deformities. It had been truly said that a comprehensive classification was the chief problem at present in connection with the subject. Without in any way disparaging the excellent work done in that direction, it was impossible to say that there was at present an entirely satisfactory classification for malocclusions of the teeth. Many classifications had been suggested, and it would be possible to quote at least a dozen that had been presented to orthodontists during the last half century, but nearly all of them had been based on pathological manifestations, and, until the cause or causes of malocclusions of the teeth had been discovered and it was possible to formulate an etiological classification, it would be necessary to rest satisfied with something less than the best and to accept a classification constructed upon the nature of the deformities. Such a paper as that which was read before the Society last December by Professor Sir Arthur Keith and Mr. Campion was of the greatest assistance in guiding thoughts in the right direction. In the past he was afraid most orthodontists—and he would specially include himself—had treated the cases quite empirically, without making any serious attempt to make an accurate diagnosis. He trusted those days were gone, and he would urge that every endeavor should be made to find a classification based upon etiological factors and that most careful study should be given to the normal conditions and the earliest deviations from those normal conditions, and then, by personal observation, physical examination and clinical investigation of each individual case, it might be possible to arrive at a correct diagnosis which would greatly aid, and in all probability would greatly simplify, the treatment.

The President said he had been very interested in Mr. Payne's extension of the term "diagnosis," because he had carried the subject further. As put on the agenda, it seemed rather an indefinite term to use, and he had been thinking of the way in which diagnosis in other matters was sometimes brought about. Symptoms not found in the case were ticked off one after another and a diagnosis was arrived at by the negative method known as exclusion, so that the practitioner was driven more or less empirically to say that it must be something else.

Mr. Pitt was particularly interested in what Mr. Friel had to say about the importance of noting the bodily condition, because he believed that was a thing of great importance. Many of the most marked cases of malocclusion were intimately associated with disordered functions, and chief amongst them was the disordered respiratory function and a large number of them were associated with adenoids and mouth breathing. It was important to remember that the effect of that on the teeth brought three or four factors into operation on the malocclusion. There was the absence of normal nasal respiration and its effect on the occlusion; then there was the positive factor in the shape of perverted mouth breathing; there was the lower nutrition, which was frequently associated with such cases and which affected all the processes of growth; and through that there might be possibly some abnormality of the internal secretions. He only put that forward tentatively. He had noted in many cases of mouth breathing how frequently the nutrition was impaired and how very often, when the adenoids had been removed and the mouth breathing only persisted as a habit, by checking that the bodily nutrition could be improved, and he believed with Mr. Friel that attention to the bodily health might be as important as anything in the treatment of cases of malocclusion. With regard to Mr. Payne's remarks, there certainly ought to be an attempt to get a classification based on etiology.

Mr. H. Chapman thought from what the various speakers had said the matter of

diagnosis was an extremely complicated one and, bearing in mind the paper read last December when Professor Keith described a very large area of the face as the "masticatory face," it seemed that that also had to be taken into very serious consideration in any diagnosis that was made. This had been more than emphasized by the fact of the necessity of taking into consideration the whole bodily condition. It would be perhaps made clearer how such things worked if orthodontists kept nearer to the teeth. If the jaws were really malformed bones, then all the bones articulated to them must be also malformed and had to be taken into consideration in the diagnosis, and as the diagnosis was for a practical purpose it would be necessary to consider the malformation of that area (the masticatory face of Keith) in the treatment prescribed. For that reason in many cases, more especially where the patients were 12 years of age and upwards, the retention of all the teeth was a matter that required very grave consideration, and he had himself to confess to having in such circumstances treated several cases recently by the method of extraction, whereas ten or fifteen years ago he would have treated similar cases by retaining all the teeth. The instruments that had been shown that evening were extremely ingenious and valuable, but, as Mr. Friel had pointed out, they had to be used with a very great deal of care and judgment, because there were so many factors entering into the matter that to get a proper result the instruments had to be adjusted to the various conditions present, and to do so correctly depended on the judgment of the operator. By using the symmetroscope in one way it permitted the molar to appear to have come forward, and by using it in the way Mr. Friel said was correct the molar was practically in its normal position. In all cases it was necessary to use whatever aids were available and a considerable amount of judgment to arrive at anything like a correct decision. It was a very complicated problem. One had to consider the relationship of the teeth to one another in each jaw, the real relationship of the teeth to one another in opposite jaws, the relationship of the jaws to one another, the relationship of the jaws to the face and the relationship of the face to the whole of the body, and he felt sure that Mr. Friel's communication, for which he was very grateful, would materially assist in elucidating the problem.

Dr. Sylvain Dreyfus, of Lausanne, sent the following contribution to the discussion.

In his original paper Dr. Dreyfus discusses in an exhaustive study the horizontal planes of orientation, and follows this by a proposal to adopt the plane of Francfort, which is determined in the following manner:—

1. The first fixed point selected is the superior auricular point, that is the upper edge of the external auditory meatus (on the living subject the anti-tragus).

2. The second point is the inferior orbital point, that is the point of the orbit which is on a vertical line passing through the pupil.

The line joining these two points is the plane of Francfort.

With the adoption of the principle that it is not necessary to determine an ideal line, Dreyfus determines the limits of the abnormal; then, between these limits everything will be normal. This method of examining cases permits us to take into consideration the particular type of each. For this purpose he proposes two vertical planes, the orbital plane of Simon, which he would prefer to call "the frontal plane passing through the border of the orbit" and a second plane passing through the nasion (the suture of the nasal bones with the frontal bone).

The facial diagnosis is made according to the following data:

If the chin is between the two planes, the mandible is normal, if it is behind the first, or in front of the second, we have respectively retrognathism or prognathism of the mandible. For the maxilla the diagnosis is as follows:—

1. The plane of Simon, normally passes between the canine and first premolar.

2. The plane Sylvain Dreyfus, i. e., the one passing through the nasion, passes along the anterior surface of the upper incisors.

With these two planes as the fixed points diagnosis of facial malpositions can be made.

The author showed the application of his proposals by means of photographs of the patient, a transparent positive on glass being superimposed on an exactly similar photograph on paper, except that the positive on glass was taken with the mouth open; other-

wise the pictures were identical; the planes referred to were drawn on the print and by superposition the relation of the upper teeth and chin to these lines was readily seen.

Dr. Dreyfus points out that the region of the molars may be normal, and that the abnormality is then found in the anterior part of the maxilla only.

The author sent his "Facial Diagnoscope" to illustrate a rapid method of making the diagnosis according to the principles enunciated above, without the assistance of photography. The principle of the diagnoscope is to locate the three lines referred to exactly and in correct relation to one another, and then the relation of the teeth and chin to these lines can be seen at once.

This is the first time that an exact method of making a diagnosis in the sagittal direction has been brought forward. It enables us to conceive a basis of classification for maxillary malpositions based on their relation to the facial profile.

REPORT OF THE EDUCATION COMMITTEE TO THE BRITISH SOCIETY FOR THE STUDY OF ORTHODONTICS

TERMS OF REFERENCE

TO consider the present method of teaching orthodontics in Great Britain and Ireland, to report thereon and to make recommendations, if thought fit.

1. *The Need for Orthodontic Treatment and the Results Arising from Lack of Treatment.*

Irregularities of the teeth are frequently so gross as to constitute an obvious defect of feature often accompanied by perverted respiratory function, impaired biting power, and an increased liability to pyorrhœa and dental caries.

2. *The Present Deficiencies of Treatment.*

Admitting the necessity for the treatment of such cases, how is it met?

So far as a large section of the population is concerned, it is not met at all. A great number of children of the poorer classes do not receive any treatment. In the dental hospitals only a small fraction of those requiring attention receive it; in the school clinics such treatment is rarely undertaken except in so far as extraction of the teeth, unaccompanied by any supplemental regulation, suffices.

With regard to treatment in private practice, it would be a mistake to consider that the facilities for orthodontic practice are co-extensive with the number of practitioners. Actually many cases which could and should be treated, are not, even when the parents are willing to have it done. This branch of practice is not congenial to some dentists for various reasons, while there are others who would like to carry out orthodontic treatment but feel diffident of their ability.

Orthodontics is admittedly a branch of dentistry which not only calls for high technical skill, but also needs much experience in diagnosis and prognosis, and although many dentists may feel themselves competent to carry out the details of treatment, they do not always feel able to make the preliminary diagnosis which involves a decision as to the methods to be employed.

The student qualifies, knowing less of orthodontics than of any other branch of dentistry.

It stands somewhat apart from the rest of dentistry, and the evolution in skill and knowledge which every dentist may reasonably hope for, may leave his knowledge of orthodontics stationary.

3. *The Desirability of Instituting Special Instruction in Orthodontics.*

It is desirable that special instruction should be given in our teaching schools so that the student may at least know the elements of the subject. Knowing these, he will have a basis on which to build, and if he so desires, can set out to become specially skilled in orthodontics. If his desires should not lie in that direction, he would still be able to recognise his limitations in regard to difficult forms of malocclusion and the possibility of their treatment by those with a wider knowledge of the subject.

Out of this arises the question as to whether one member of the hospital staff should be entrusted with the whole of the teaching of orthodontics so that in effect, he becomes the orthodontic specialist on the staff, or whether all members of the staff should take their turn in treating orthodontic cases and giving clinical instruction on their visiting days. In a few dental schools the former method is in vogue, but in the majority all members of the staff are, in theory, equally responsible for orthodontic treatment and instruction.

The Committee feels that there should be a member of the staff in charge of the orthodontic department, responsible for all treatment of the patients. The main body of the teaching to the students, both theoretical and practical, would naturally fall to this member of the staff. At the same time the Committee is of the opinion that it would be unwise to debar other members of the staff from teaching. This could be arranged without lessening the administrative authority of the dentist in charge of the orthodontic department.

The Committee suggests the following as a Model Scheme of Undergraduate Education in Orthodontics:—

A course of instruction in orthodontics should be compulsory and should include technical work, lectures and clinical work, as follows, viz.:—

1. *Technical Work (in the laboratory, accompanied by lecture demonstrations).*

This course should consist of:—

(*a*) Casting impressions and the preparation of the model.

(*b*) Free-hand soldering technic and wire bending.

(*c*) The construction of plain bands to fit natural teeth, by direct and indirect methods.

(*d*) The construction of simple appliances, removable and fixed on models and phantoms respectively.

(*e*) The construction of various devices to retain removable appliances.

2. *Lectures on the Theory and Practice of Orthodontics.*

These lectures should form a special course and not be included in the

course of lectures on Dental Surgery. This is desirable so that orthodontics may be not submerged by the other subjects, which must inevitably form the greater part of the syllabus of lectures on Dental Surgery, and to give it a position in the curriculum worthy of its importance.

With regard to the lectures themselves, it is obvious that their arrangement and subject matter must vary with the views of the lecturer; nevertheless there is common ground as set forth in the following syllabus:

1. The definition and aims of Orthodontics.
2. A short history of the subject.
3. Definition of terms and phrases.
4. Morphology.
5. Normal development, growth and relationship of the jaws and associated bones and teeth and the natural forces which influence them.
6. Forces governing the eruption and arrangement of the teeth.
7. Normal occlusion and the factors producing it.
8. Normal variation.
9. Effect of function on form and growth.
10. Etiology of malocclusion: (1) Hereditary causes.
    (2) Congenital "
    (3) Pathological "
    (4) Functional "
    (5) Dietetic "
    (6) Local "
11. Models, x-rays and photographs.
12. Diagnosis and classification.
13. Prognosis.
14. Treatment: (1) Preventive.
    (2) Remedial. (*a*) Surgical
    (*b*) Mechanical
    (*c*) A combination of both
    } Retention.
15. Factors influencing the choice of treatment.
16. Case recording, charts, and preservation of data.

3. *Clinical Work.*

The student should hold a dressership of not less than three months in the orthodontic department.

This should comprise instruction in:

(*a*) The taking of impressions in plaster and other materials.
(*b*) Diagnosis and charting.
(*c*) Treatment by extraction.
(*d*) By surgical methods other than extraction.
(*e*) By appliances.
(*f*) By a combination of any or all methods (*c*), (*d*) and (*e*).

At the end of each course of lectures a class examination is desirable.

It is earnestly recommended that greater stress should be laid on this

subject, and that orthodontics should form a separate subject in the examination for a diploma or degree.

POSTGRADUATE INSTRUCTION IN ORTHODONTICS

There should be facilities for postgraduate instruction in orthodontics in connection with all dental schools. Postgraduate teaching might be of two classes:

(*a*) As for undergraduates, with such modifications as might be necessary to meet special conditions.

(*b*) A more detailed course for those fitted to receive it.

Courses for short periods held at times which might be most convenient to dentists in practice, would probably be found the most suitable arrangement and meet a much-felt want. This would necessitate special classes in practical and theoretical work apart from those held for the benefit of the students.

(Signed) J. H. Badcock, *Chairman.*

APPENDIX

The following expanded syllabus is suggested as a guide for teachers and may be varied to suit the curricula of various schools and examinations, e.g. the L.D.S., B.D.S., etc. The numbers of the headings in the appendix will be found to correspond with the numbers in the model scheme.

I. TECHNICAL WORK IN THE LABORATORY, ACCOMPANIED BY LECTURE DEMONSTRATIONS

The taking of plaster impressions, e.g., one student by another student.

Casting impressions and the preparation of the models.

Free-hand soldering technic and wire bending, e.g., soldering a circle of wire inside a square inside another circle.

The construction of plain bands for anterior teeth.

Labial "pull-to" joint or "squeeze" joint; lingual "pull-to" joint, "overlap" joint.

The construction of plain bands for posterior teeth by the direct method; indirect method.

The construction of simple appliances, removable and fixed, on models and phantoms.

The construction of various devices to retain removable appliances.

II. LECTURES ON THE THEORY AND PRACTICE OF ORTHODONTICS

1. *The definition and aims of Orthodontics (Dental Orthopædics, Odonto-Prosopic Orthopædics)*:—

Orthodontics includes the study of the growth and development of the jaws and face particularly, and the body generally, as influencing the positions of the teeth. The study of the action and reaction of internal and external influences on this development, and finally the prevention and correction of arrested and perverted development. The aims of orthodontic practice are to obviate the evils set out in the first part of this report, and should be both preventive and curative.

References: Nos. 1, 2, 3, 4.

2. *A Short History of the Subject.*

References: Nos. 5, 6, 7.

3. *Terms and phrases* should be defined as they arise, special attention being paid to the following terms:—

"Morphology," "Growth and Development," "Function," "Physiological and Chronological Ages," "Diagnosis," "Prognosis," "Heredity."

Great confusion results from the loose use of such terms, both in understanding problems and in conveying ideas to others.

4. *The Morphology of the Deciduous and Permanent Teeth:—*

A knowledge of the form, grooves and cusps of the teeth is essential in the study of occlusion.

References: Nos. 8, 9, 10, 11.

5. *Normal development, growth and relationship of the jaws and associated bones and teeth and the natural forces which influence them.*

Embryology of the Face and Jaws; showing how particular forms in later life may represent survivals of embryonic stages.

Anatomy of dental tissues, cementum, periodontal membrane, alveolar and basilar bone; plasticity of bone; bone limited as to its possibilities of growth by heredity, but dependent as to development on function.

Wolff's Law.

Oppenheim's experiments.

Physiology of the above tissues.

References: See No. 6. (below)

6. *Factors influencing the eruption of the teeth.*

Factors influencing the arrangement of the teeth.

e.g. { Approximal contact points. / Inclined planes. / Muscular pressure.

References: Nos. 2, 12, 13, 14, 15, 16, 18, 19, 20, 21, 40.

7. *Normal occlusion and the factors producing it.*

Law of Occlusion:—

Occlusion, the basic principles of orthodontics; Demonstration of the functional significance of the surface detail of each tooth.

Meaning of the word "Normal."

"Normal" for the species.

"Normal" for the individual.

The term "Normal" can be used with so many different meanings that it is desirable to have one fixed meaning when it is used in reference to orthodontics, i.e., "Functional Standard."

Occlusion: Hypothetical, typical, individual.

Heredity:—

1. Weissman's Theory; Mendelism; Neo-Lamarckism.
2. Inborn and acquired characters; environment.
3. Mutations and reversions.
4. Variations.

5. Quantitative and Qualitative Continuous and Discontinuous Variations.

References: Nos. 2, 18, 26, 27, 28.

Habit:—

Tendency to repetition a normal characteristic of living tissue. Influence of habit on function a large factor in determining development.

References: No. 29.

8. *Normal Variation.*

Individual occlusion a problem of normal variation.

Application of Law of Variation lies in distinction between individual variation and malocclusion.

References: Nos. 23, 24, 25.

9. *Effects of function on form and growth.*

References: Nos. 20, 40.

10. *Etiology of malocclusion.*

1. Heredity.
2. Congenital conditions.
3. Pathological conditions.

Effects of Constitutional Diseases.

The effect of abnormal internal secretions on growth and development of the teeth and jaws.

4. Functional causes. Habits. Muscularity and methods of testing it.
5. Diet considered chemically and physically.
6. Local conditions which interfere with the development of the jaws and alignment of the teeth.

References: Nos. 1, 2, 18, 33, 34, 43.

11. *Models, X-rays and Photographs.*

References:

12. *Diagnosis and Classification.*

Classification of malocclusion:—

Angle's, Bennett's, G. Villain's.

Terms used to denote malocclusion.

Methods and instruments employed, e.g.:—

Prosopometer. Symmetroscope.

References: Nos. 1, 2, 18, 30, 31, 32, 32A.

13. *Prognosis.*

Age, Heredity, Social conditions, Health and Personal characteristics.

14. *Treatment.*

1. Preventive.
   (*a*) Care of deciduous dentition.
   (*b*) Extraction of deciduous teeth.
   (*c*) Splints after loss of deciduous teeth.
   (*d*) Cure of bad habits.
   (*e*) Surgical (adenoids and tonsils, etc.).
   (*f*) Diet.
   (*g*) Exercises.

2. Remedial.
   (*a*) Surgical. Extraction, immediate rotation and translation.
   (*b*) Mechanical.
   Mechanical principles employed in orthodontic appliances.
   Action and reaction.
   Resultant of forces.
   Levers, orders I, II, III.
   Elasticity.
   Inclined planes.
   Wedges.
   Anchorage: Definition and and application.
   Simple, stationary, reciprocal, etc.
   Relation of the physiology of dental and associated structures to the design of orthodontic appliances.
   Physiology of tooth movement.
   Necessity for minimum interference with function.
   Appliances for the development of normal function.
   Materials used in fixed and removable appliances.
   Properties of materials as applied to various purposes.
   Exercises.
   (*c*) A combination of (*a*) and (*b*).
   The importance of hygiene during treatment.

References: Nos. 16, 40, 41, 42.

15. *Factors influencing the choice of treatment.*
   1. Age.
   2. Attendance.
   3. Health conditions, dental and general.
   4. Social conditions.

   References:

16. *Case recording charts and preservation of data.*
   References:

III. CLINICAL WORK

This should comprise instruction in:—
   (*a*) The taking of impressions in plaster and other materials.
   (*b*) Diagnosis and charting.
   (*c*) Treatment by extraction.
   (*d*) By surgical methods other than extraction.
   (*e*) By appliances.
   (*f*) By a combination of any or all methods, (*c*), (*d*), and (*e*).

REFERENCES

[1]Malocclusion of the Teeth. E. H. Angle. 7th Ed.
[2]Practical Orthodontia. M. Dewey. 4th Ed.
[3]Principles and Methods of Orthodontics. B. E. Lischer.
[4]A Review of the Development of Orthodontia. F. E. Noyes. *Dental Cosmos* (Jan., 1911).
[5]History of Orthodontia. B. W. Weinberger. *International Journal of Orthodontia* (1915-1921).
[6]"Orthodontic Education." A. Le Roy Johnson. *Dental Cosmos* (Oct., 1920).

[7]General History of Dental Surgery from Primitive Times up to the Modern Epoch, and chiefly of France (French). J. L. André Bonnet.
[8]Dental Anatomy. G. V. Black.
[9]Dental Anatomy. M. Dewey.
[10]Dental Anatomy. C. S. Tomes. 7th Ed.
[11]Dental Anatomy and Physiology. A. Hopewell-Smith.
[12]Anatomy (for Embryology). Gray. 21st Ed.
[13]Manual of Human Embryology. Keibal & Mall.
[14]Internal Anatomy of the Face. M. H. Cryer. 2nd Ed.
[15]A Contribution to the Mechanism of Growth of the Human Face. Sir A. Keith & G. G. Campion. Transactions of the British Society for the Study of Orthodontics, 1921.
[16]Tissue Changes, particularly of the bone, incident to tooth movement. A. Oppenheim. *American Orthodontist* (p. 111, 1911-12).
[17]Bone Tissue, its growth and development. A Resumé. M. Hellman. *American Orthodontist* (p. 111, 1911-12).
[18]The Science and Practice of Dental Surgery. Norman G. Bennett.
[19]The Antiquity of Man. (Page 461.) Sir A. Keith.
[20]Form and Function. E. S. Russell.
[21]Adolescence. S. Hall (Chapter on "Growth and Development").
[22]Comparative Dental Anatomy. M. Dewey & A. H. Thompson.
[23]The Individual Normal. A. Le Roy Johnson. *Dental Items of Interest.* (Nov., 1919), or *International Journal of Orthodontia* (June, 1919).
[24]The Meaning of the Normal. A. Le Roy Johnson. *International Journal of Orthodontia* (Oct., 1920).
[25]The Diagnosis of Malocclusion with Reference to Early Treatment. A. Le Roy Johnson. *Journal of Dental Research* (Mar., 1921).
[26]Heredity. J. A. Thomson.
[27]Darwinism and Human Life. J. A. Thomson.
[28]The First Principles of Heredity. S. Herbert.
[29]Habit. A. Le Roy Johnson. *International Journal of Orthodontia* (Feb., 1915).
[30]A Short Note on Classification. J. Sim Wallace. *Ash's Magazine* (1914) Also *International Journal of Orthodontia* (1915).
[31]Angle's Classification. S. Friel. *Dental Record* (pp. 341-345, 1912).
[32]Milo Hellman. Angle's Classification of Malocclusion. *Dental Cosmos* (iii., pp. 233-234, 1911).
[32A]The Unification of Terminology and Classification of Maxillary Dento-Facial Abnormalities. Georges Villain. *Transactions of British Society for Study of Orthodontics* (1915).
[33]Essay on the Irregularities of the Teeth (1904). J. Sim Wallace. London, The Dental Manufacturing Company.
[34]Dental Diseases and Public Health. J. Sim Wallace.
[35]Diagnosis of Malocclusion of the Teeth. S. Friel. *Dental Cosmos* (p. 825, 1914).
[36]A New Method for Indicating Normal and Abnormal Relations of the Teeth to the Facial Lines. J. A. W. Van Loon. *Dental Cosmos* (p. 973, 1915).
[37]Classification and Terminology in Orthodontia. B. E. Lischer. *Items of Interest,* (p. 352, 1912).
[38]Report of the Committee on Orthodontic Classification. *Dental Record* (p. 401, 1912).
[39]Facial Contour and Orthodontics. G. G. Campion, *British Dental Journal* (Dec. 1st, 1921).
[40]Menders of the Maimed. A. Keith.
[41]The Removable Lingual Arch as an Appliance for the Treatment of Malocclusion of the Teeth. J. V. Mershon. *International Journal of Orthodontia* (1918).
[42]The Lateral Expansion of the Dental Arch. S. Friel. *British Dental Journal* (April, 1920.)
[43]The Prevention of Dental Caries. H. P. Pickerill. 2nd Ed.
[44]On Bone Formation. Murk Jansen. University Press, Manchester.
[45]A Study of the Relation of Dental Conditions, Biting Force and the Hand-Grip. *Dental Cosmos* (lix., pp. 519-609, 1917).

DISCUSSION

Mr. J. H. Badcock (Chairman of the Committe on Orthodontic Education), presenting the above Report of the Committee, said the Committee addressed a questionnaire to all the teaching bodies asking for information as to the amount of orthodontic teaching given by them, what it consisted of, and so on, and not until they had acquired a considerable amount of information on such points did they commence making any constructive proposals.

When they did so, however, they went into the matter very thoroughly, as he thought the members would agree.

The report was, he thought, self-explanatory. It consisted of two parts, the report proper and an appendix. The report proper dealt with the matter in general terms, while the appendix went rather more into particulars. It was thought that the appendix might be useful to teachers who were preparing lectures or courses of instruction on the subject, and the Committee was very anxious to give them all the information they might require without attempting to dictate in any way as to what should or should not be taught. The Committee realised that the teaching of any subject had to be left to the teacher, and its aim had been to supply him with information which might be useful to him in setting to work on his task.

Not only was the teaching of the student dealt with, but as would be seen, there were recommendations for the teaching of postgraduates. It is very desirable that some postgraduate teaching should be available in this country.

The *Chairman* said all the members of the Society had received the report by post, and no doubt had read it carefully. It seemed to him a most excellent one. It might seem a little egotistical for him to say that, seeing that he was a member of the Committee, but none of the credit was due to him personally; he had merely been a looker-on while others did the work. The burden of the work had fallen mainly on three or four members of the Committee, but, he thought the Committee would agree that the biggest part of it had been undertaken by Mr. Badcock, the Chairman of the Committee, and by Mr. Pitts, the Hon. Secretary. The work which they had done, and which was so well described in the report, would remain of value for many years to come. The more one studied the report the more one realised the immense value of the material therein contained, and the fact that it had not been put together hurriedly, but that each item had been carefully discussed and gone over again and again made it of far greater value than if it had been merely the product of a few weeks' or a few months' work.

Dr. Sim Wallace said the report might be regarded almost as a classic, and supplied a want that had been long felt in this country. He suggested that instead of criticising it the members should unanimously adopt it.

Mr. Cale Matthews said he was not in a position to criticise the report, having been a member of the Committee which drafted it. He agreed with Dr. Wallace that it might be regarded as a classic on the subject with which it dealt, and it had already been of infinite value to him in his work during the past session.

Living so far from London, he had only been able to afford slight help to the Committee by giving them his experiences and methods of teaching. The great value of the report lay in the references. It was often difficult to prove one's point with the stray material usually at hand, and a list of references such as was given in the report was therefore of extreme value. He regretted that the present meeting was not more representative of the teaching bodies in London; he had imagined that the meeting would be a crowded one, and that representatives of the schools would have attended in force to help in passing the report. Possibly they would discuss it amongst themselves and formulate their schemes upon it.

Mr. W. W. James pointed out that the clinical work outlined on pages 3 and 7 was practically the same, except in regard to one item, the taking of impressions. On page 3 the clinical work for students included: "(*a*) The taking of plaster impressions," while on page 7, for postgraduates, the work was given as "(*a*) The taking of impressions in plaster and other materials." He thought the position of the two should be reversed. (This error of page 3 has been corrected).

Mr. A. T. Pitts said that as one who had had a small share in the preparation of the report, it would ill befit him to say anything about its merits, while for the same reason he did not propose to draw attention to its demerits! To anyone who had enjoyed the opportunity which he himself had had of studying the raw material on which the report was based, namely syllabuses, reports of teaching and so forth from all over the country, it would be very obvious indeed that the standard of orthodontic education in this

country was not very high. With some exceptions, the standard in a great many of the schools was low, and in some, indeed, there did not appear to be any special teaching of orthodontics at all. He did not think this country was peculiar in that respect; he believed in some of the American schools the students did not take any part in the treatment of malocclusion, a point to be remembered at the present time, when everyone vaunted American dentistry at the expense of English. The report did not exhaust the subject, but it was obvious that the Committee had to go tactfully to work, and not arouse local jealousies. If the detailed syllabus of instruction seemed a little colourless it was because the Committee particularly wished to avoid pinning themselves to any particular school; and he thought he might say without flattery that that had been accomplished. The syllabus for lectures on the theory and practice of orthodontics could be taken with a clear conscience by either Dr. Angle or Sir Frank Colyer for a course of lectures, even though their lectures might be poles asunder. The report only touched slightly on the question of postgraduate teaching, but he thought and hoped that that would grow out of increased facilities and improvements in undergraduate teaching, because it was of the greatest importance at the present time that there should be instruction for postgraduates. He hoped the report would not be still-born, but would have some influence. It had been of great value to him personally, and he had learned more about the subject through working on the Committee than he knew before, so that from his own point of view the report had been well worth while. He hoped some of those who represented the various schools would discuss the report; he was sure the Committee would welcome criticisms.

Mr. Cale Matthews said that orthodontics was included in the subjects for examination for the L.D.S. diploma according to the new schedule issued by the General Medical Council, but their regulations did not provide for any compulsory teaching of orthodontics; it was merely placed in brackets after "dental surgery." It was obviously left to the choice of the lecturer on dental surgery as to whether he should touch on the subject of orthodontics at all.

Dr. Norman Bennett said that what Mr. Cale Matthews had quoted from were recommendations of the General Medical Council, and were not compulsory. In the second place, it was important to remember that it was the principle of the General Medical Council to leave as much latitude as possible to the schools in regard to their method of teaching. The Council put down orthodontics as a subject which would form part of the examination, and left it to the schools to decide whether they were capable of teaching it with or without special lectures.

Mr. Northcroft said the orthodontic teaching at the school with which he had been connected in London was always done by Mr. Chapman; the subject with which he himself had dealt was operative dental surgery, and he never poached on Mr. Chapman's preserves. He was greatly interested, however, in the thorough teaching of orthodontics, and he thought the report would be of immense help to teachers. He was very pleased to hear the remarks made about the references, which seemed to him to be very important. He thought he might say, without divulging any confidences of the Committee, that Mr. Sheldon Friel had been particularly active in collecting those references, and the Committee and the Society owed him a considerable debt of gratitude for his work in that connection, which was evidently appreciated.

Mr. Harold Chapman said the point to which Mr. Cale Matthews had spoken, and on which Dr. Norman Bennett had spoken, with regard to the inclusion of orthodontics in dental surgery, was one on which he felt the Society might congratulate itself, because until those recommendations of the General Medical Council which had been referred to were made he did not think the word "orthodontics" had been referred to at all either by the General Medical Council or the Examining Body of the College of Surgeons in London. The Society might perhaps take a little kudos to itself in that the word had been added; it was a step in the right direction. Mr. Pitts had said that he would not refer to the demerits of the report. For his own part, as a member of the Committee, he felt a little diffidence in doing so. He had already found the report extremely valuable, and would continue to do so, but from the teaching point of view there were one or two practical

points which, if it had been possible to include them in the report, would have been of great help, he thought, to many. The preparation of the report took a long time, and to have gone further would probably have taken much longer and been extremely difficult, but he felt it would have been very helpful if in the report could have been included a chart for use in schools, or even suggestions for a chart, and also a list of the instruments which it was necessary for a student to possess. The want of both those things, and particularly a list of instruments, was a great handicap in the teaching of orthodontics. There were certain things which it was almost impossible to do without, and yet in very many instances they were not included in the kits, presumably because they added so very considerably to the expense.

Another point which was always cropping up was as to what cases the students should be allowed to handle. He always felt great diffidence in allotting a difficult case to a student, and yet it seemed impossible to refuse treatment to such patients when it was so urgently needed by them for their ultimate benefit. He fully realized that such points were almost impossible of solution in a report such as that under discussion, but they were of very great practical moment, and if a solution, or even a partial solution, of them could be obtained he was sure it would be of great help to those who had to teach the subject of orthodontics.

Mr. J. H. Bodcock, in reply, thanked Mr. James for calling attention to a clerical error in the syllabus of clinical work; the two paragraphs should, of course, be the same. He also thanked the members for the way in which they had received the report; it was a great encouragement to the Committee to know that their labours were appreciated.

BRITISH SOCIETY FOR STUDY OF ORTHODONTICS

AN Ordinary Meeting of the Society was held at 11, Chandos Street, Cavendish Square, London, W., on Monday, May 1st, 1922.

The chair was taken by *Mr. Sidney Spokes.*

The *Chairman* announced that unfortunately Professor Fawcett of Bristol was unable to be present at the meeting. Professor Fawcett had written expressing his very great regret. He (the Chairman) was sure that all the members would share in that regret. Professor Fawcett hoped to read his paper at some future time. The Council had arranged that some Casual Communications should be brought forward at the meeting.

The first Casual Communication was from Mr. C. S. Morris on a very pronounced case of Class III (Angle).

Mr. C. S. Morris (illustrating by means of the epidiascope) said that this was the case of a female child. Members would notice that she was a fairly well nourished child of good vitality. It could be seen from her face that she was not a dull-looking child. (Illustration of Models, page 1.)

He would like to point out two things about the features generally. One was that she had a very decidedly square jaw for that type of case. That, he thought, was rather unusual. The other was that she was rather hammered in in the front. That was very noticeable. Members would see that in the premaxillary and nasal region she was decidedly flattened. Looking at the lower jaw alone one saw that it was not normally prominent. On the whole, the child was a well-nourished child, with a happy expression, and lively and of good vitality. As far as the child's general history went there was no his-

tory of adenoids. She had been all her life a normal child except for her appearance.

The thing that struck one at once when one looked at the two models side by side was that they did not seem to have any relation whatever to one another. There was an extraordinary dissimilarity. The lower jaw was a little narrow across. The upper jaw was extraordinarily shortened antero-posteriorly.

He wished that it were possible to show the whole thing so that members could see what an extraordinary relation there was in front. Putting the models into relation with one another, what one obtained was a very extraordinarily short arc on the upper jaw, running right across, leaving a great gap between the maxillary incisors and the mandibular incisors.

With reference to the treatment, he hoped that members of the Society would be able to suggest what the treatment should be. The case was not a very easy one to treat, and he would like to have all the light upon it that he possibly could have. He had never before had a case approaching it. He thought that it would be a useful case to discuss in the Society, and therefore he had brought it forward. He might mention that the patient was six years of age on February 22nd last. The condition was always present.

Mr. Schelling said that he had a very similar case some twenty-five years ago, the case of a lad of twelve or fourteen years of age. Mr. Tomes and Mr. Betts saw the case at the time. It was decided that, unless the relatives thought fit to consult a surgeon and have a large wedge taken out of each ramus, nothing could be done. From his facial appearance, it was thought that he might develop into a person looking like a pleasant kind of bulldog. He had!

The *Chairman* said that he did not think that Mr. Morris had mentioned whether the girl had any brothers or sisters or whether she was an only child, or whether there was any kind of history in the family of such a condition.

Mr. Morris replied that there was no history in the family of any other case. He had made inquiries upon the point. Her sister was quite normal.

Mr. Pitts said that, looking at the models and at the photographs, it struck him that there was in the case a combination of two conditions. Apparently the mandible was affected, if one might judge from the occlusion, but it also seemed to him that it was almost as much a case of maxillary retrusion as well as a case of mandibulary protrusion, if one might judge from the photograph. So the two, acting together, had undoubtedly constituted a very formidable deformity. It was certainly remarkable at such an early age, because one's experience was that in such cases the deformity became worse, and the prognathous appearance was likely to increase. The child had the appearance that one really associated much more with a protruding mandible. One would imagine that the deformity in the case was likely to increase.

As far as treatment was concerned, it seemed very difficult to suggest anything. He did not know whether possibly pushing forward the upper arch might help in any way. It might help a little in making the deformity appear relatively less marked. But then the difficulty was that the rest of the

case consorted with the appearance of the jaws, and a pushing forward of the tooth might only make the facial appearance worse. The case was extremely interesting, and one was interested to hear that apparently there was no history of anything of the sort at all. Habits were sometimes suggested as being a factor. Sir Frank Colyer had suggested abnormal presentations at birth. One would certainly think that there was a developmental effect which might be explained to some extent possibly by lack of growth of some of the various sites about which Sir Arthur Keith spoke at the last meeting.

In answer to *Mr. Babcock,* who asked whether the child could breathe normally through her nose, *Mr. Morris* replied that she could.

The *Chairman* asked Mr. Badcock whether he had any suggestions with reference to treatment.

Mr. Badcock replied that he was afraid he had not. Class III cases always seemed to him to be particularly hopeless. He had yet to see a case which had been treated satisfactorily in any other way than by extraction, if one could consider that method satisfactory: It resolved itself into tilting back the lower teeth. He was wondering whether the exhibition of extract of one of the ductless glands might help. It seemed obvious that the main fault was in the development of the upper jaw.

The *Chairman* agreed.

Mr. Morris thought that, looking at the child and the models generally, the under-development was mostly in the premaxillary region. The child was undoubtedly a little prenormal in the mandible, but not very markedly so. It was not very easy to see everything on the screen. It was not so noticeable there that her mandible was at fault. As a matter of fact, it was the premaxillary region of face that was wrong. The striking point in confirmation of that was that her second deciduous maxillary molars were almost their proper width across. Looking at the models, one would see that the child was very short antero-posteriorly in the maxilla. As to treatment, he had thought of doing what Mr. Badcock had said except as far as his remarks about the extract of ductless gland were concerned. He had thought of taking out a bicuspid on each side of the mandible and retracting very slowly over a long period of time, with an attempt, if it were possible, to move the anterior teeth bodily backwards. He had a very difficult case of the sort some years ago. That method seemed to him to be the only hopeful one. One could not start the treatment now; but, at the same time, one would start and try to develop the premaxillary region by bodily movements anteriorly of the anterior teeth. That was all that he could suggest. He would like any members present to criticise that suggestion as severely as they could, because he really wanted to know how to tackle the case. He did not feel inclined to advise the resection of piece of a mandible on each side. He saw Sir Arbuthnot Lane do that once with very noticeable effect. He did not know the subsequent history of the case. He did not know at all whether it was usual, as Mr. Pitts had suggested, for such cases to get worse and worse.

Mr. W. Rushton said that he had just had a case which was not nearly so pronounced as the case under discussion. He had treated it. He had waited

until the permanent incisors had erupted, then he raised the bite and pushed those over the lower teeth and extracted a right lower lateral. The result was excellent. Whether Mr. Morris would be able to do that in such a pronounced case as the one now before the meeting he could not say.

The *Chairman* said that the Society would be very much indebted to Mr. Morris if he would follow up the case and let the members know at some future meeting of the Society what the development was in two or three years' time or, perhaps, on even longer time than that. He thought that they must now challenge Mr. Rushton to produce the models of his case at some future meeting.

Mr. Rushton said that he would produce them with pleasure.

Mr. Matthews said that a good many years ago his father started treating a case on the same plan as Mr. Rushton had mentioned. He observed that had he taken out one of the lower incisors he might reasonably have expected the upper arch to have dropped down over the lower. It would just have reached and come over the edges. It was just over, but it looked as if there was very great proclination. There was every probability that had he taken out the incisor, too, the appearance would have been better and it would have been more comfortable for the child.

The *Chairman* said that he would ask Mr. Badcock to bring forward his Casual Communications.

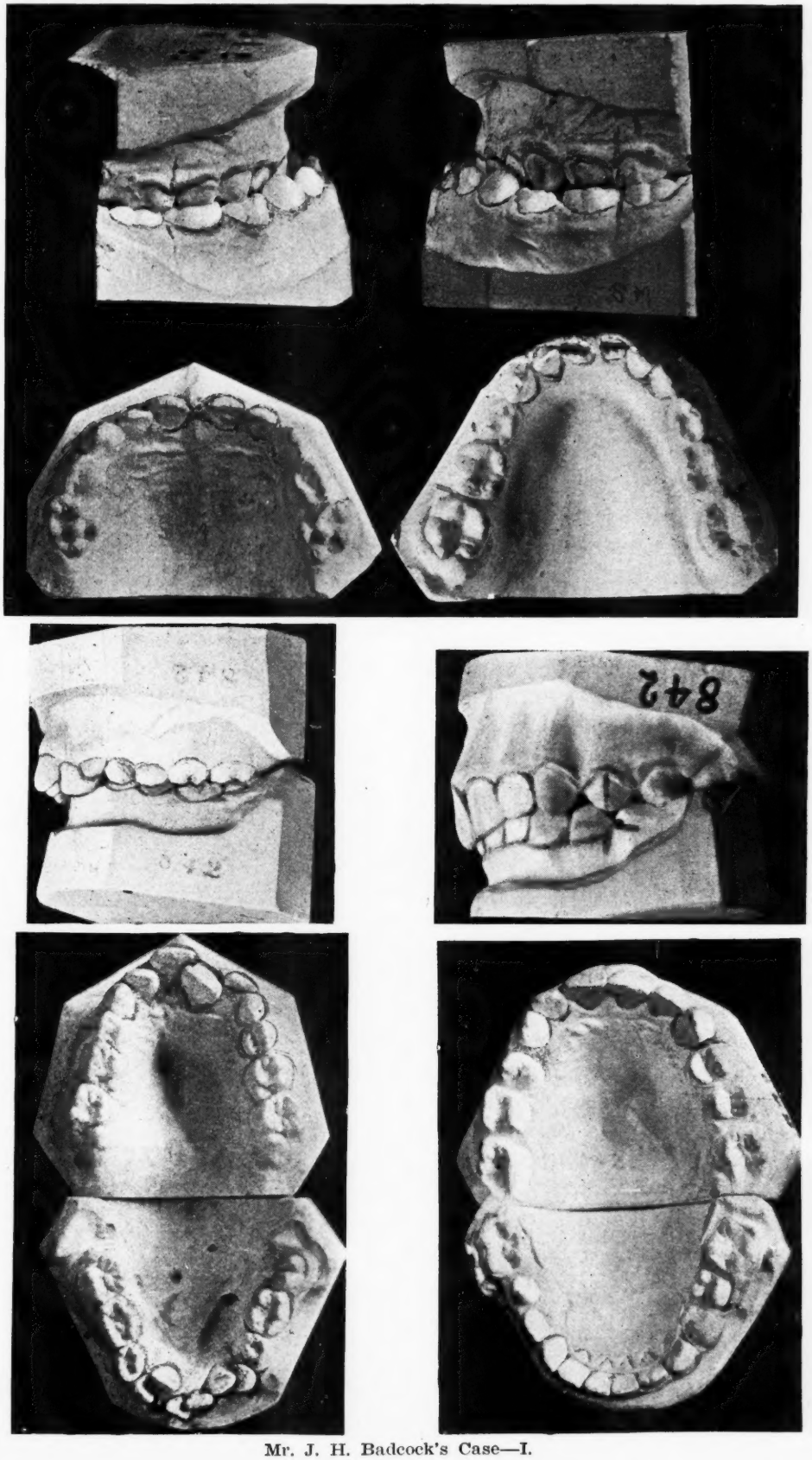
Mr. Badcock said that the notice had been very short, and he had just laid his hand upon the three cases which happened to be the nearest at the time. They were three very ordinary cases, but perhaps they were none the less interesting for that reason, because they were of the kind which dentists so frequently met.

His principle of treatment was very simple. He aimed at two things, efficiency of function and good appearance, and he tried to reach the goal by the nearest route.

The first case was that of a child who was eight years of age when the treatment began. It was a Class II case, and there was considerable crowding in both jaws. The child was treated by expanding with expansion plates first of all. After a while a biting plate was put in to raise the bite. Then, when the temporary teeth which had supported the expansion plates came out, a buccal arch was put on the upper jaw and a lingual arch on the lower jaw, and reciprocal traction was used. The child was still wearing her lingual arch because one of the lower pre-molars had not yet erupted. Otherwise the case was practically complete. (Page 1 in illustrations.)

In reference to expansion, it might interest members to know that the expansion screw which went by his name had been very greatly improved by Messrs. Ash, who had introduced into the mechanism what was practically a spring washer which prevented the backward movement of the screw. Formerly the thing was continually unscrewing and wasting time. That was a very unsatisfactory feature. Now one could rely upon it, and, provided that the instructions were carried out, it acted every time. There was one other little point about the apparatus which he might mention. Some people had

Mr. C. S. Morris's Case.



Mr. J. H. Badcock's Case—I.

grumbled and had said that the parallel bar was placed too near to the screw, making it impossible to get a key in between. That was true; but there was no necessity to get the key in between. If one made a wide division between the halves of the plate behind the screw there was sufficient room for the key. It seemed to him that getting the parallel bar close to the screw was an advantage inasmuch as it made the whole apparatus smaller. He found, in talking to one gentleman about it, that it was his habit to screw the apparatus up in the mouth; but he (the speaker) saw no advantage in doing that. In that case a wider space would be necessary. *That* was the little expansion plate. (Showing plate.) One could see at the back a wide space between the two halves of the plate, which allowed one to put a key in at the back.

The case which he had just shown members was begun in March, 1918, and was now finished. It had taken about four years. It seemed to him that one could not hurry cases at that age. One must wait on growth.

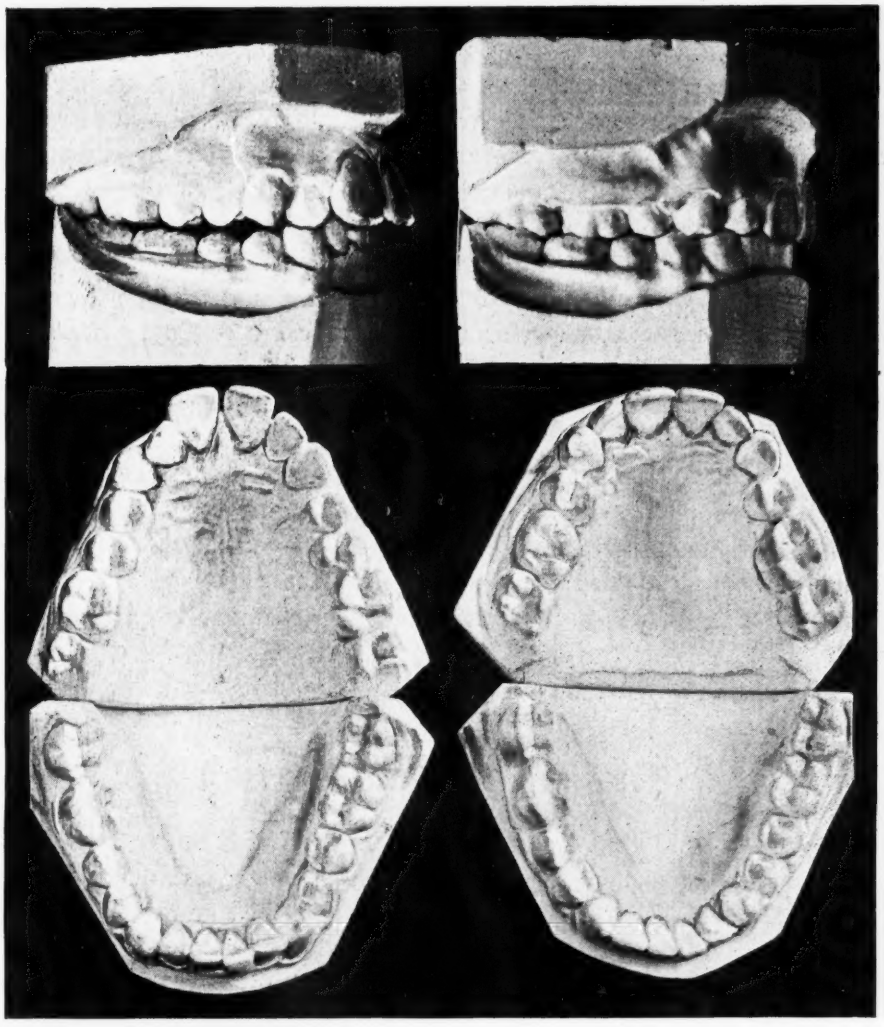
He did not think that there was any fear of a relapse, because at the present moment the child could not get her jaw back, even if she tried.

The next case (II) was that of a boy who was nearly fourteen years of age when he first saw him. It was a Class II, Division I case. The teeth were protruding instead of being crowded. The treatment was begun in September, 1919. It would be seen from the models that there was in that case again a very marked overbite. The lower incisors were biting on the palate. At the patient's age he thought that reciprocal traction had no chance of success, also that a biting plate by itself would probably not be of very much use, so he extracted first upper premolars and fitted arches on both jaws with hooks over the incisor teeth, mounted on D-bands. Bending the lower teeth. Then he put in a biting plate. The patient wore the biting the lower molars. Similarly, the upper arch, while it retracted the incisors, also pushed them upwards, and in that way one was able to overcome the overbite, which was very considerable. The treatment began in September, 1919, and in the following April he put in a biting plate in addition, which the patient wore for three months. That was in August, 1920. Eleven months after the beginning of the treatment he removed the lower arch entirely. He used the word "I," but as a matter of fact the case was carried through almost entirely by his partner, Mr. Doherty. It was really Mr. Doherty who ought to be bringing the case forward, and not he. The case was finished in December, 1920, about fifteen months from the time at which it was begun. The apparatus was not taken off until much later, because the parents were very anxious that it should not be. They had had experience of another member of the family who had been treated and whose case had relapsed utterly. That case was not treated by Mr. Doherty.

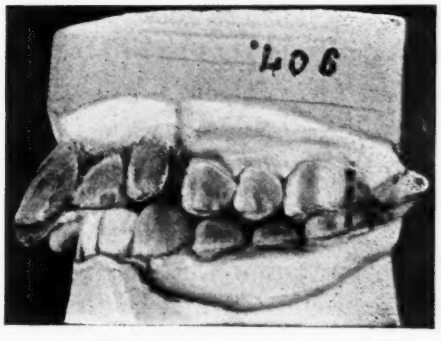
This case was rather more difficult than the other because of the boy's age, although he might mention that there was considerable trouble because the boy was always falling ill. He was a very delicate boy and was ill for months at a time.

That was the result. The lower incisors were now biting on the cingula of the upper incisors and not behind them.

Mr. Badcock's Case—II.



Mr. Badcock's Case—III.



He thought that the case was rather an interesting one, because of the excessive overbite.

The next case (III) was that of a boy who had, he thought, the flattest palate that he had ever seen. He was aged twelve. The case was begun in January, 1920. He adopted the very unusual treatment of extracting the canines. He began by retracting the upper incisors. The case was begun in January. In July the anterior teeth were so far back that they touched the lower teeth. Then he put in a biting plate. The patient wore the biting plate for rather longer than three months. Eventually the upper teeth came back as far as they would go, and there was still a small space between the upper laterals and the first premolars. So he extracted a lower incisor and continued retraction of the upper. To-day that space was entirely closed, and the spaces in the upper jaw also.

In order to show how flat the boy's palate was, he had taken a piece of composition and pressed it up with his thumb into the palate. The upper line was the line of the boy's palate. He had sketched in roughly in pencil the position of the incisor teeth as nearly as he could guess it. They were lying almost horizontal and almost parallel to the palate, and the palate was almost flat. That was his difficulty, and the reason why he took out the canines.

He did not think that anyone talking to the boy would know that he had not any canines.

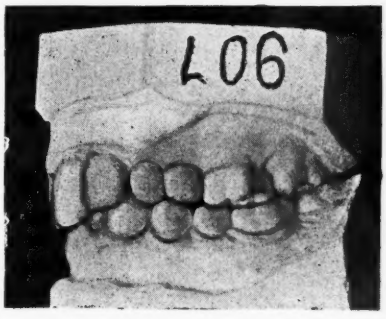
Mr. W. J. May asked how Mr. Badcock had advanced the lower jaw in the first case.

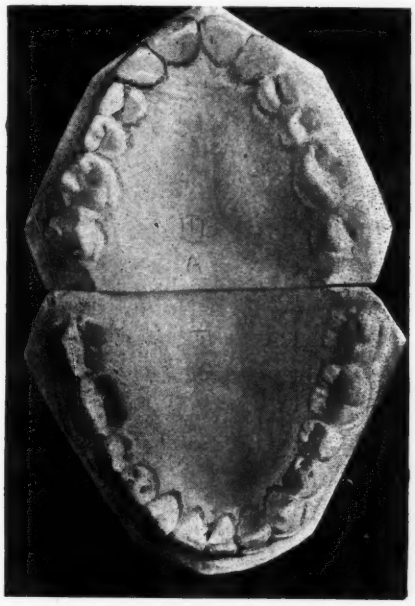
Mr. Badcock said that it was done by reciprocal traction, using a lingual arch in the lower jaw instead of a buccal arch, such as one used years ago. He was asked whether the treatment improved the depth of the palate in the third case. It would be seen that the palate was quite different in appearance now. He did not suppose that the treatment altered the palate really; but the general effect was different.

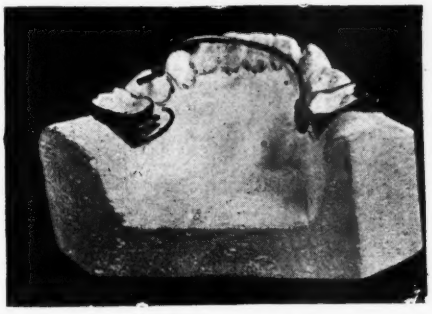
The Chairman thought that Mr. Badcock must be congratulated upon the result which he had obtained in the case in which he removed the canines. He had seen cases in which the upper canines had been removed. He had treated many regulation cases in his time, but he did not think that he had ever brought himself yet to extract an upper canine. He thought in that case Mr. Badcock was justified in his treatment. He (the Chairman) would have been still more satisfied if he could have seen a photograph of the patient; but he understood Mr. Badcock to say that anyone in conversation with the boy would not know that he had really lost his canine teeth.

Mr. Badcock replied that the boy was a very small-featured boy, a little boy, with a small face and small features altogether. He had never had any canine prominence except that the tips of the canines stood out. They were the prominences. The result was that there was no canine prominence in the ordinary sense of the word. The absence of it was not at all noticeable. The boy was quite a nice-looking boy. He would be very much obliged if any member would tell him how else he could have treated the case. He did not

Mr. Badcock's Case—III.







Mr. G. Northcroft's Locking Device.

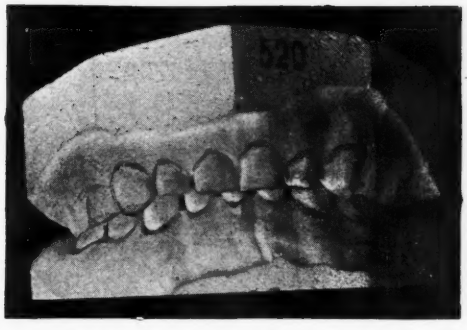


Fig. 4.—Mr. G. Northcroft's Case—IV, to show three temporary lower incisors.

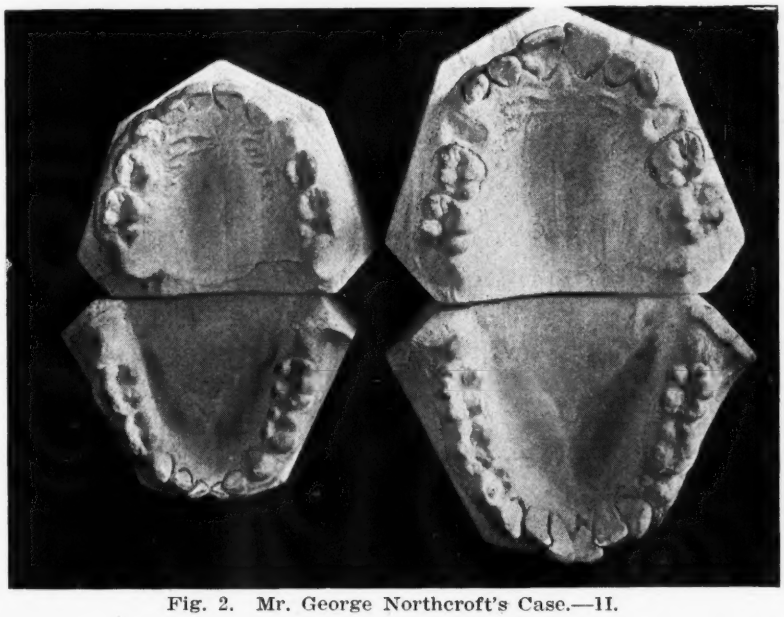


Fig. 2. Mr. George Northcroft's Case.—II.

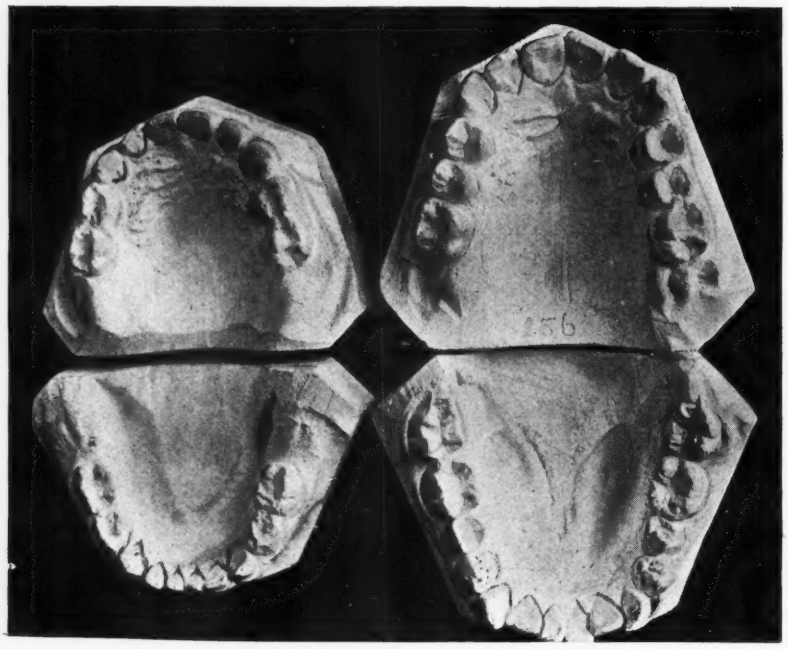


Fig. 3.—Mr. G. Northcroft's Case.—III.

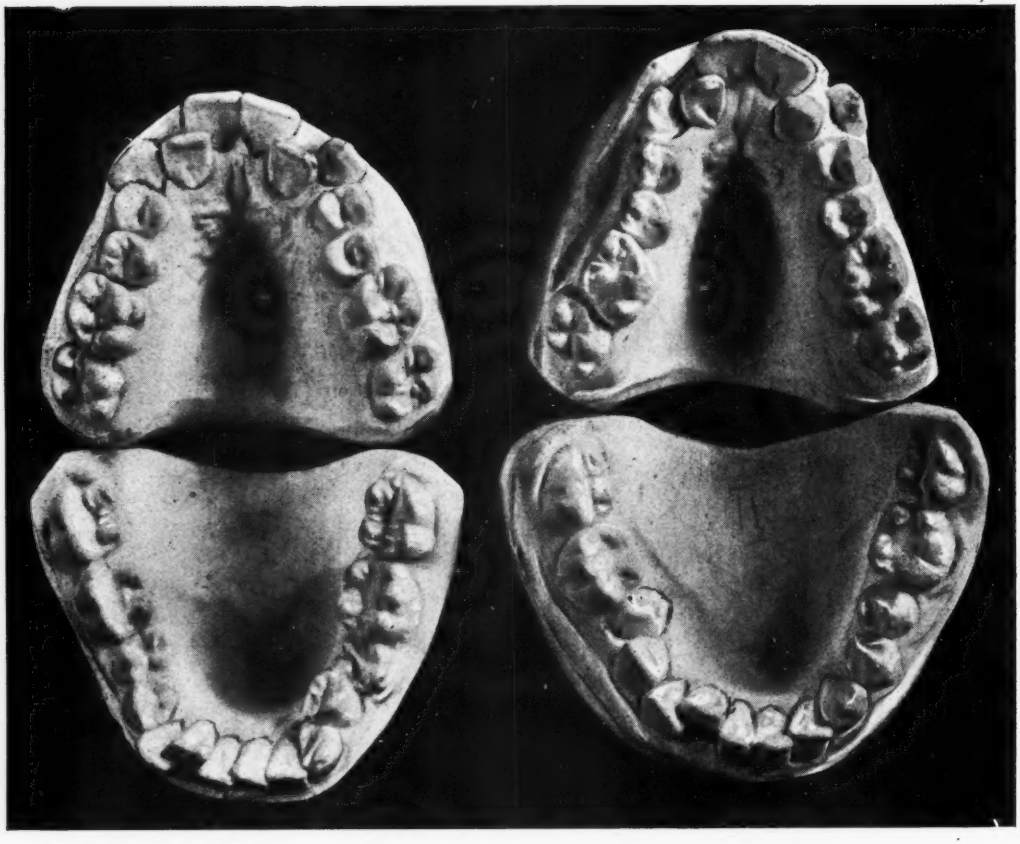


Fig. 1. Fig. 2.

Mr. Bocquet Bull's Case.

want to extract the canines, but how else could he have dealt with the case?

Mr. Schelling said that his sister had an upper canine tooth taken out when she was at school in Switzerland some forty years ago. The absence of it was never noticeable.

The Chairman said that he would now asked Mr. Northcroft to be good enough to give the members a Casual Communication.

Mr. Northcroft said that he regretted to say that Mr. Garrow's Communication had turned out to be much more elaborate than was at first contemplated, and therefore he had postponed it.

The first case was that of a locking device for a lower lingual arch which had been actually worn. He found it quite successful. It had proved its use where the temporary molar teeth were very shallow and vertical tubes were, consequently, excessively short. He had found when that was the case that the front of the arch had a great tendency to ride up and down. The horizontal tubes gave a longer bearing surface and held the arch rigidly in place. (Illustration, page 3.)

The arch was made with a stop on each side to abut against the ends of the tubes. It was placed in position by inserting the right-hand end in the closed tube, and then snapping in the left-hand side in the half-open tube, having first pulled back the latch out of the way, which returned in front of the stop on the arch.

The second case (Fig. 2) which he would like to bring before the notice of the Society was that of the models of a male at the age of four years and nine months and the same at twelve years and one month, which showed a condition which, as he had pointed out for over twenty years, so often existed and which, for the most part, the textbooks still denied; that is to say, that the temporary dentition could foreshadow most of the irregularities found in the permanent. The chief interest in this particular case was that the permanent dentition had followed the irregularities of the temporary dentition almost exactly and showed a condition that must occur in a very large number of cases, only, when they were seen in the permanent dentition, all record of the positions of the temporary teeth was lost, because of the failure of practitioners to take sufficient interest in the tedious side of research work. Two outlines of the labial surfaces of the temporary and permanent dentitions were thrown on the screen and showed that, instead of the permanent arches being so much larger, there was no room to accommodate the permanent teeth without crowding.

It was with some surprise that he saw that room was given in the *British Dental Journal* for April 15th to a translation from the *Bulletin de la Societe Anatomique,* in which the author claimed that, because the measurements of the teeth in the temporary arch of three neolithic child skulls totalled the same or more than the permanent teeth as measured in their crypts, therefore the temporary arch was identical with the permanent one. The author showed that, far from being identical, in only one skull were the measurements identical, and that in the two others the measurements of the temporary arch actually exceeded the permanent, in one case by 3 mm. and in the other

by 6 mm. By contrast, and without appealing to Sir F. Colyer, Sim Wallace and others, he (the speaker) wished to show models (Fig. 3) where the spacing at six years old was very marked, which had imbrecated lower incisors eight and a half years afterwards. Although the diameters of the teeth of the two models in the lower measured 65.8 mm. and 70.2 mm. respectively, there was crowding in spite of the spacing, and hence the mandible needed more interstitial growth than actually took place. The upper measurements showed a corresponding excess of the permanent upper, the measurements being 75.2 mm. and 81.8 mm. respectively. The labial measurements of the temporary upper arch and the permanent upper arch, measured with lead foil, showed a difference of 6 mm., while the lower arches measured in the same way showed only a difference of 1 mm., proving that the spaces between the temporary lower teeth accounted for 4 mm. This incidentally showed also how fallacious the measurements of M. Siffre must necessarily be. Those were models of the case of a male aged six.

There was one other model which he would like to record. It showed the absence of an incisor in the mandible of a male child aged five. The arch was otherwise quite perfect. There was naturally a certain amount of space in the incisor region which was due to the absence of the one tooth. (Fig. 4.)

He would be interested to hear if other members had ever seen such a case.

The little patient was too nervous to have radiographs taken.

Mr. Pitts said that he had a case recently bearing a little on the last case and which was, perhaps, even more interesting. It was that of a boy in whose case there was the absence of two lower incisors in both the temporary and the permanent dentition. The teeth that corresponded to the lateral incisors were conical teeth, and there was a big gap between them. The boy was about ten or eleven years of age. His mother said that there had never been any other teeth but those two, and that there had always been a space. The next week he was able to see the boy's brother. He showed precisely the same condition. The mother said that a twin brother of the boy, who was now dead, also had the same condition. Therefore there was a congenital absence of two incisors in both dentitions, and there was the presence of conical teeth in three members of the family. The mother herself had normal teeth, and so had her husband. He had been unable to obtain any other history.

With regard to Mr. Northcroft's remarks in which he criticized the work of Siffre, Siffre had made some fuller communication upon the subject to the recent Orthodontic Congress in France. He termed it a law. He (the speaker) took no responsibility for Siffre's work—he had not had the opportunity of seeing Siffre's later work; but personally he must say that he did not think that it had a great deal of bearing.

Mr. George Thompson said that last week he had a case of a patient with only three lower incisors. They were all different sizes. The middle one was very small. On the left-hand side what was supposed to be a lateral incisor or a central was nearly twice the size of the other one. The right incisor

was normal size for a lateral. There was no appearance of germintion of the two on her left side.

The *Chairman* said that he would ask Mr. Bocquet Bull to describe an unusual case of contracted arches.

Mr. Bocquet Bull said that the patient, a girl, *æt.* twelve years, attended on September 22nd, 1921, at Guy's Hospital. The condition of growth was shown in the first two models (Fig. 1). The treatment was not proceeded with at once, as there was a long waiting list, and she was asked to attend again. On January 20th of the present year, four months later, she again attended. Further impressions were taken, and when the models were compared it was noticed that a marked decrease in the width of the maxillary arch had taken place.

Fig. 2 shows the models taken four months later. He referred the patient to the Throat Department for a report on the condition of the nose and throat, and received the following report: "A few adenoids. Septum deflected to the left, but not very marked. Some muco-pus, indicative of chronic rhinitis, which would conduce to mouth breathing." The mother had previously informed him that the girl had been a mouth-breather from infancy. The child was apparently in excellent health and well-developed. A third set of impressions was taken on April 26th, a few days ago. They showed very little in the way of change as compared with the second set of models.

He had brought the case forward very hurriedly, and had not time to take anything much in the way of accurate measurements; but one could see definitely from the models the marked difference. The rough measurements were as follows: the maxillary arch measured between the antero-buccal cusps of the first permanent molar teeth in the first model gave a measurement of 45 mm., and in the second model, taken four months later, 39 mm. The distance between the buccal cusps of the first premolars in the first model measured about 35 mm., and in the second model 28 mm.

In the mandible there was also a slight difference, but one of expansion, and not contraction. The measurement taken between the antero-buccal cusps of the first permanent molar teeth in the first model was roughly 38 mm., and in the second 43 mm., an increase of 5 mm. Taken between the buccal cusps of the first premolars in the first model, it was 28 mm., and in the second model 33 mm., a difference of 5 mm.

As to what the contraction in the upper arch was due to, he had not been able to find out, and he was afraid that he had not any suggestion to offer. The child was perfectly healthy and perfectly well developed. It was simply owing to the fact that it was not possible to proceed with any treatment immediately that the contraction was discovered.

The *Chairman* said that Mr. Bocquet Bull seemed to have been very fortunate in getting a case which showed the contraction in the making, so to speak. It was rather a fortunate thing for the members that it was not possible for the case to be treated on the first occasion.

The *Chairman* said that he hoped that members would be able to look at the models, because he felt quite satisfied that the difference was not shown

so well on the epidiascope as it was in the models. He did not know whether it was due to the illumination not being the same with all three models at the same time.

He thought that a vote of thanks was due to Mr. Morris, Mr. Badcock, Mr. Northcroft, and Mr. Bocquet Bull for providing the members with such a great deal of useful material. Members would, he thought, all share his opinion that the evening had been a most instructive one. The cases which had been brought forward were really very interesting, and they had to tender their thanks to those gentlemen for having stepped into the breach at very short notice.

The motion was carried by acclamation.

The *Chairman* said that the next meeting was fixed for October 2nd and would be a demonstration meeting. Several demonstrations had already been promised to the Secretary, who would be very glad to hear of any other

The proceedings then terminated.

demonstrations for that occasion.

DEPARTMENT OF ORTHODONTIC TECHNIC

Edited By
H. C. Pollock, D.D.S., St. Louis, Mo.

ELEMENTARY ORTHODONTIC TECHNIC

By H. C. Pollock, D.D.S., St. Louis, Mo.

(*Continued from May issue.*)

THE EXPANSION ARCH, OTHERWISE CALLED THE ALIGNMENT WIRE OR LABIAL ARCH WIRE

BY review of the orthodontic literature over the past twenty years, also by mental reflection of the methods employed by those who have devoted special and particular attention to the correction of malocclusion, the conclusion may be safely reached that the mechanical principles as exemplified in the expansion or alignment arch, and used in conjunction with the principles of the fixed appliances, have enjoyed wider range of usage and popularity than has any other single mechanical unit evolved during this period of time. Some are of the opinion that the more appropriate name for the above device may be "Alignment Wire," in preference to "Expansion Arch," inasmuch as the function of this arch is not always that of expansion but may be at other times that of contraction. Consequently the term "Expansion Arch" is misleading and not truly descriptive of its universal function of activity.

In any event while the appearance and function of the labial arch wire seem simple, its mechanical intricacies must be indeed well understood if the operator is to derive the most benefit and efficient service of which it is capable. Well understood and manipulated it may be said to be still even at this time the most efficient and satisfactory mechanical principle which may be employed in the treatment of malocclusion of the teeth and is so accepted to all intents and purposes by those who devote a considerable amount of attention to the practice of orthodontia.

There exists apparently little divergence of opinion as to the merits of the labial arch wire, regardless of the almost infinite variety of appliances which are and have been advocated from time to time, the principle of the

labial arch wire still stands out and may be said to be the most standard and dependable device ever used and advocated; in addition it has enjoyed a long and satisfactory career in orthodontic history. The operator who masters the labial arch wire can rest assured that he is not experimenting with an untried device, and for the man of limited experience this mechanism can be classed as standard and as well accepted as any single item in the whole field of orthodontia from a mechanical standpoint; and for the amateur it is by all odds preferable to assure results to the many hybrid mechanical appliances which are featured in the advertising pages of our journals, many of which if used as a clinic before a society of orthodontists would provide excellent numbers to be used by the entertainment committee.

The threaded arch wire is the type more universally used, as supplied by manufacturers in lengths of about four to four and one-half inches. These wires are usually employed as round wires, however they are modified by the oval, the half round and the ribbon variety, depending upon the function it is desired that they shall perform.

The wire should be closely fitted and adapted to the teeth. Beginning with a scratch mark made at a point in the middle of the wire, it being anticipated that the scratch mark will assume a position just opposite the median line between the central incisors when the wire is finally fitted to the dental arch. Starting at this central point then, as indicated, the wire is carefully bent and contoured with the fingers first in such a manner that it is closely adapted to the teeth on one side of the arch all the way back to the molar region. After this is accomplished, the other side or leg of the wire is then adapted in like manner, the finished bent wire then closely fits the dental arch and assumes a position incisogingivally at a point about the gingival margin of the gum tissue. Well adjusted as above, the arch wire then in future treatment will in no manner interfere with the tissue of the cheeks or lips, will be inconspicuous and, so to speak, will be tailored to place.

To quote from Dewey, "It must be remembered that the arch embodies two forms of mechanical devices, the screw and the spring lever. Therefore we have an enormous amount of mechanical force at our disposal. In using the expansion arch, or alignment wire, we must be familiar with the various forms of anchorage in order to obtain the best results. In applying the alignment wire, to move the anterior teeth forward, we depend upon simple anchorage obtained from the molar teeth that have been fitted with bands. The tubes on the molar bands must be so placed, and the sides of the wire so aligned, that the tube and the arch wire will be parallel to each other before the arch is placed in the tube. If this is not accomplished, the molars will be rotated by the spring of the arch if the arch is not parallel to the tubes." This point may be referred to in the illustration below, in which it can be easily understood that if the leg of the arch wire which is not parallel to the buccal tube was forced within the latter, the tendency and result would be the rotation and tipping of the molar or anchor tooth. Fig. 18 shows a badly fitted arch, which if applied as illustrated would tip and

distort the molar anchorage and would cause the molar tooth to lose its anchorage.

The wire must be amply rigid in order that after having been fitted into the buccal tubes it will not move upward and downward in the incisogingival direction, that is, it should not be elastic in this direction, to only a slight degree. If the wire is "whipy" it is most difficult to control the force in the direction which it is desired it should be applied. The force of mastication displaces this type of wire, notwithstanding it becomes equally difficult to control the anchorage upon the anchor teeth. The alignment wire is an arc of a circle, a spring and a lever, its energy is derived by the effort of its spring tension to release itself after having been placed upon the

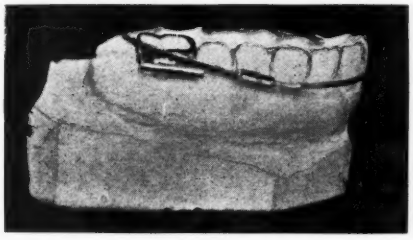


Fig. 18.—Labial arch wire fitted badly, if forced into the tube as illustrated above molar anchorage will be lost and molar will be displaced.

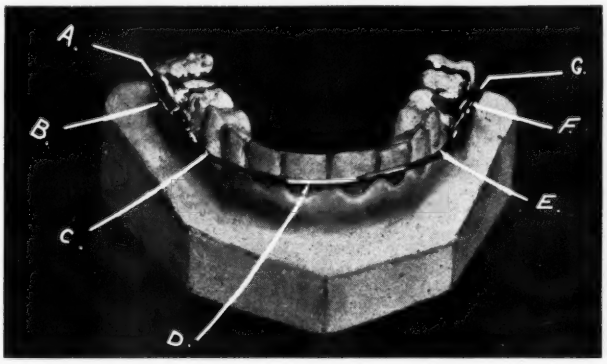


Fig. 19.—Illustration of labial arch wire adjusted in an imperfect manner. No harmony exists between the position of the labial arch wire and the dental arch.

teeth, the anchor teeth hold the spring wire down, arrest it as it were, and this tension is then reciprocated from tooth to tooth where energy may be desired. When first fitted to the dental arch, the wire should be so adjusted that it assumes a passive state, no spring tension being exerted whatsoever. After the patient has become accustomed to the same, however, the spring tension then may be applied to a more or less degree as may be desired, by removing the wire and bending accordingly. The spring tension may also be increased and decreased by tightening or loosening the nuts which are located mesial to the buccal tubes. The wire should be engaged in the buccal tube, accurately, the two members in other words should fit; however, caution must be exercised to allow the wire to slip freely forward and backward within the tubes and not bend therein.

The general direction of the legs of the arch wire should also be parallel to the buccal surface line of the posterior teeth, notwithstanding it should be parallel to the occlusal line of the buccal teeth. The legs of the arch wire should be in the same plane, and likewise the tubes which engage it. If the legs of the arch are not adjusted in the same plane, the pressure as exerted moves on the bias, the tendency being to move the anchor tooth downward on one side of the mouth and upward upon the other.

Fig. 20.—Types of labial alignment wires, one with friction sleeve nut and one without. (Dewey.)

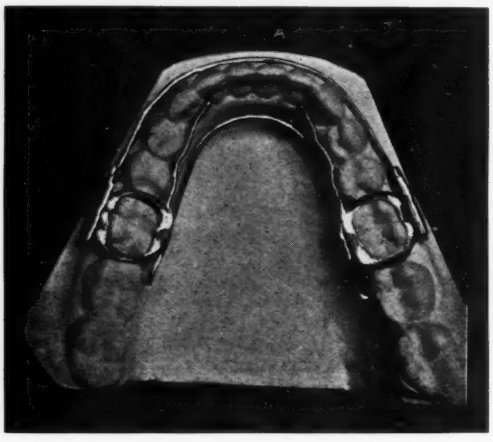


Fig. 21.—Illustrating a well fitted alignment wire adapted closely to the teeth, parallel with the buccal direction of the teeth and at no point stands away from the curvature of the dental arch.

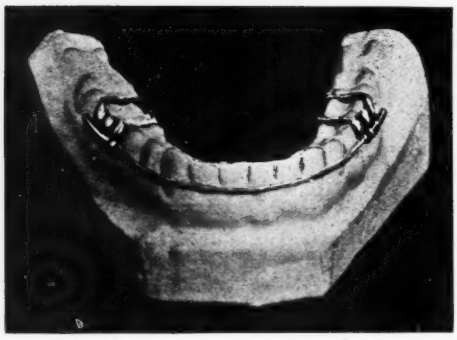


Fig. 22.—Labial arch wire properly fitted to place.

Fig. 19 is an example of the usual errors which are made in the adjustment of arch wires. Everything is wrong in this illustration and nothing is right. To treat a case of malocclusion with an alignment wire adjusted in this manner is no more effective than is the traditional barking at the moon. To criticize this illustration: *First:* The legs of the wire are not in the same plane, causing pressure to be exerted upon the molars in the wrong directions (A-G). *Second:* It is not adapted closely to the teeth, con-

sequently in treatment in all probabilities the patient would continually complain of inflamed cheeks and much distress (E-C). *Third:* The anchor tubes are not parallel with each other B-F. *Fourth:* The wire is not located in the proper incisogingival position; it should rest very closely to the gum tissue (D). *Fifth:* It is too large and bulky for a modern and efficient arch wire (D). *Sixth:* It has not been fitted even to a slight degree. It appears to have been forced into the buccal tubes rather than to have been fitted into the same, follow carefully the line A-B-C-D-E-F-G, which plainly indicates the lack of harmony between the position of the arch wire as related to the dental arch.

TYPES OF ALIGNMENT WIRES

The plain smooth arch wire with no screw threads and no nuts was the first arch wire to be used, it being the forerunner of the present type of wire. It was used chiefly for the expansion of the dental arch as well as for the retraction of the anterior teeth, used by Ainsworth, Angle, Case and others. The arch wire as used for the last two decades it

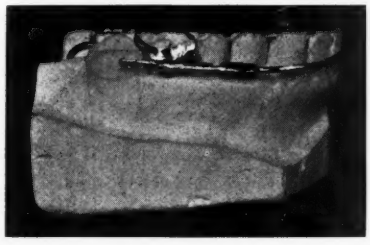


Fig. 23.—Buccal tube and arch wire are not parallel to the occlusal line of the molars and premolars. Also wire fitted to place with reverse bend.

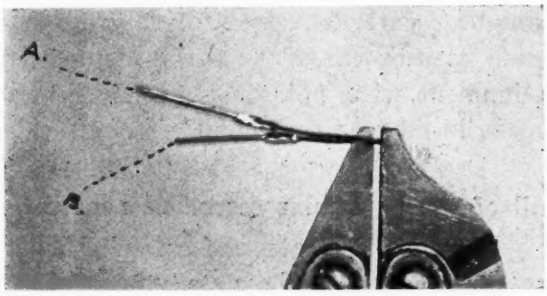


Fig. 24.—Legs of the arch wire not in the same plane, and arch when used as above is bad practice.

is observed, takes its origin from the contributions of Angle. The Angle type of alignment wire as shown in Fig. 20 has as its outstanding feature the patented friction sleeve nut which slips accurately into the mesial end of the buccal tube which member is attached in turn to the molar band. The advantage of this friction nut is *first,* that fitting home into the tube as it does, the nut is prevented from working loose due to the friction of the cheeks and other forces in mastication. *Second,* it gives to the alignment wire a rigid attachment on both sides of the mouth and eliminates much of the upward and downward movement of the wire, it being also in the opinion of many operators a decided advantage as a feature to be employed in an arch wire. The lower of the two wires shown in Fig. 20 is not equipped with the friction nut, but only relies on the simple plain threaded nut designed to work backward and forward on the wire member. The wires as illustrated above have been extensively used in the past, however, at the present time they have been largely supplanted by the more delicate, inconspicuous and more efficient types of precious metal alignment wires, which the market affords at this time, and which will be taken up later, in these pages.

The plain wire with no nuts fixed to same or threads whatsoever still has a place, for the reason that by placing a lateral spring tension in the wire (expansion) it makes a distinct effort to creep backward through the buccal tubes, thereby exerting force upon the anterior teeth. By such an effort, also lateral energy is exerted upon the molar, bicuspid and cuspid region.

In like manner if the plain unthreaded wire is contracted and then forced through the tubes it exerts a distinct forward movement, tries to creep out of the tubes, so to speak. This force then may also be utilized in moving the anterior teeth forward, by ligating the anterior teeth by either ligature or brackets.

The strictly flexible, supple, limber types of labial wires which have appeared upon the market and are extensively advertised have not enjoyed good repute among orthodontists, inasmuch as they are not for all practical purposes efficient. The question of anchorage becomes entirely a speculation in their employment, and for the most part they are food traps. For efficiency it seems to be well agreed that a labial wire, in which no stationary anchorages or fixed, firm attachments are used upon the anterior teeth, must be sufficiently rigid to become a fixture in the mouth and capable of withstanding external forces of mastication which are subjected to it and in such position cannot be easily displaced upward and downward. The supple alignment wire, opinion obviously is practically unanimous, has no practical place in modern orthodontic technic.

Fig. 21 illustrates a well adjusted arch wire. It seemingly qualifies in all of the particular essentials necessary as pointed out in the lines above.

Fig. 22 illustrates a forward, backward view of an arch properly fitted to place. It is to be noted the arch appears to be a fixture, having been fitted to place with much care and it cannot in any way interfere with mastication. It cannot interfere with the soft tissues of the mouth. It is well balanced and by the adjusting of the nuts mesial to the buccal tube from time to time, it is prepared to give good service in the matter of exerting pressure upon the teeth from place to place as may be desired.

Fig. 23 exemplifies a practical illustration of one of the more common but at the same time serious defects in fitting the wire to place. It is to be noted the buccal tube is soldered on to the molar band in such a manner that the tube is not parallel with the occlusal line of the teeth. The mesial end taking a position higher than the distal end, and the result incident to the same is an arch wire fitted to place with the reverse bend in it of just what the bend should be. The fitting of the arch wire executed properly and efficiently is a careful and painstaking operation. Still another very common error in the fitting of the wire, which may be aptly and appropriately pointed out here, is the condition exemplified in Fig. 24.

The leg of the arch wire *A* is not in the same plane as the leg *B*. When an arch wire is adjusted rigidly into the buccal tubes, with this type of spring being exerted, it is easily understood that the energy on the whole arch then would be exerted entirely in the wrong direction to be effective.

The arch in this condition would exert pressure laterally, vertically and

obliquely, all at the same time and it would be next to impossible to anticipate what the effect on the individual teeth might be.

In his seventh edition a number of years ago Angle said, "It seems almost useless to caution dentists against their persistent habit of making nuts of the expansion arch operate against the distal ends of the sheaths of the anchor bands in the effort to reduce prominence of the incisors. This should never be done, as complications from the displacement of the anchor teeth are usually the only results." Even though this method of procedure has been condemned for years, such caution is still needed. It is extremely rare, according to our best authority, that such a procedure is indicated in treatment of cases.

DEPARTMENT OF
ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

M. N. Federspiel, D.D.S., M.D., F.A.C.S., Milwaukee.—Vilray P. Blair, M.D., F.A.C.S., St. Louis, Mo.—William Carr, A.M., M.D., D.D.S., New York.—Leroy M. S. Miner, M.D., D.M.D., Boston.—Wm. L. Shearer, M.D., D.D.S., Omaha.—Fredrick F. Molt, D.D.S., Chicago.—Robert H. Ivy, M.D., D.D.S., Philadelphia

SURGICAL CASE REPORTS

By LEO WINTER, D.D.S.,

Clinical Professor, Oral Surgery and Diseases of the Mouth, New York College of Dentistry.

CASE I.—OSTEOSIS OR OSTEOGENESIS OF THE SUPERIOR MAXILLA.

THE case is of particular interest due to the fact that within the past year several similar cases have been reported and diagnosed as osteomas. The diagnosis was made despite the fact that the leading text books on pathology state that a true osteoma is rare.

Osteosis or osteogenesis is a new formation of bone. It is a localized hyperplasia due to chronic irritation. In this particular case a carious maxillary right first molar (Fig. 1) appeared to be the causative factor.

Clinical History.—The patient, a young man 17 years of age, presented himself at the Oral Surgery Clinic of the New York College of Dentistry with the following history:

One year ago patient noticed a small swelling in the buccal region of the maxillary right first molar. The growth continued in size. It gave him no discomfort and he paid no attention to it. A month ago he began having pains on the right side of his head and there being no abatement of the symptoms, went to his dentist, who in turn referred him to the clinic.

Physical examination showed the presence of a hard, non-fluctuating swelling extending from the third molar posteriorly to the mesial surface of the first molar. Color of mucous membrane normal (Fig. 2).

Pathological Report.—Sections show an outer rim of dense bone inside of which medullary canals contain fibroadipose tissue and very few medullary cells.

Treatment.—Under novocaine anesthesia a mucoperiosteal flap was made, the carious tooth removed and the excess bone tissue trimmed down to approximate the normal arch.

CASE II.—IMPACTED PREMOLAR

The patient, a young lady, twenty-nine years of age, complained of excruciating pain in the right side of her mandible. Physical examination failed to disclose the presence of any abnormality with the exception of a

Fig. 1.

Fig. 2.

large cavity in the third molar, which tooth upon testing was found to be devitalized. A radiogram was taken with the findings as shown in Fig. 3. The third molar as well as the impacted tooth was removed. The premolar was removed without difficulty by the removal of the buccal plate. The lingual plate was absolutely intact. The radiogram (Fig. 4) taken

after the operation was referred to a radiographic laboratory for its findings, and without any attempt to ascertain a clinical history a diagnosis of fracture of the mandible was made.

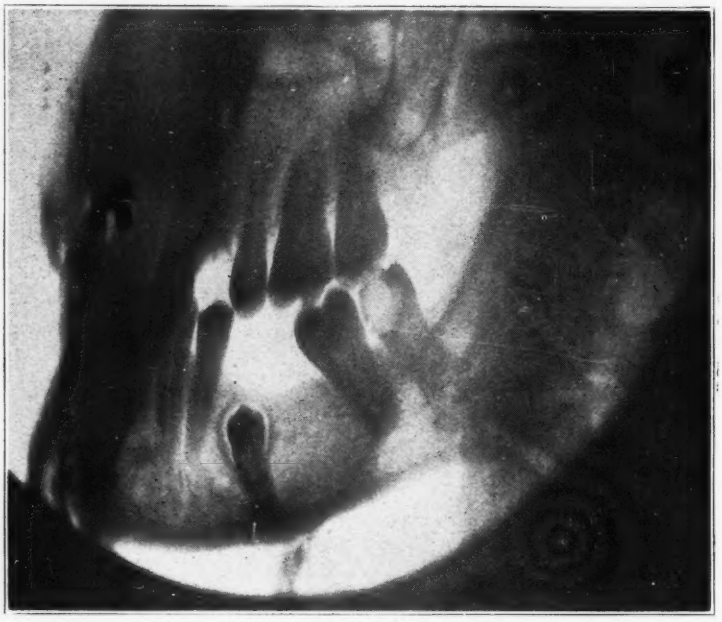


Fig. 3.

Fig. 4.

CASE III.—CONSERVATIVE TREATMENT OF DENTIGEROUS CYST.

The patient, a girl of thirteen years of age, complained of a slight pain in the right side of the mandible with intermittent swelling in the premolar region. Radiogram disclosed the presence of a dentigerous cyst (Fig. 5).

Under novocaine anesthesia a mucoperiosteal flap was made, the remnants of the deciduous tooth and the cystic membrane were removed, and the wound irrigated and sutured. One month later radiogram was taken with

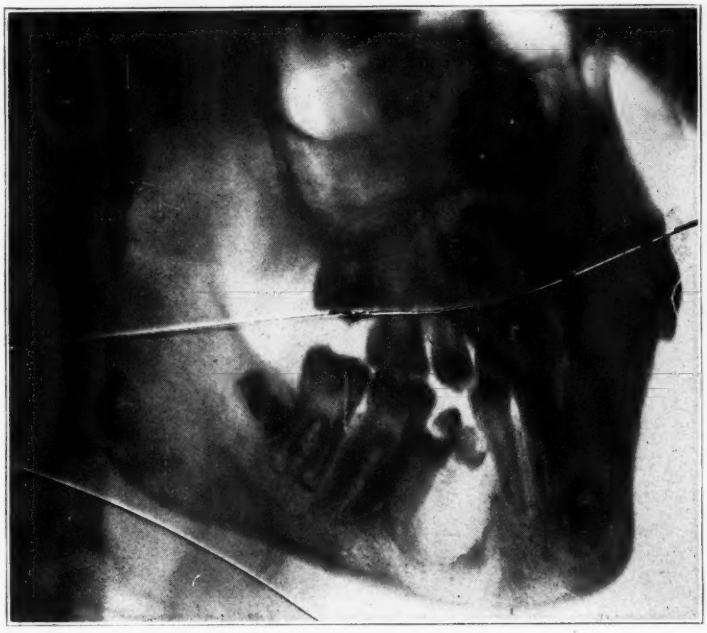


Fig. 5.

Fig. 6.

results as shown in Fig. 6. Three months following the operation a third radiogram was taken, with findings as shown in Fig. 7.

CASE IV.—MYXO-FIBROMA OF THE MANDIBLE

The patient, a woman of twenty-five years of age, presented herself with the following history:

Chief complaint: Large swelling in the right side of the mandible extending from the lateral incisor to the first molar tooth.

Previous History: Five months ago patient was annoyed by a loose tooth. Two weeks later she was able to remove the offending tooth with her fingers.

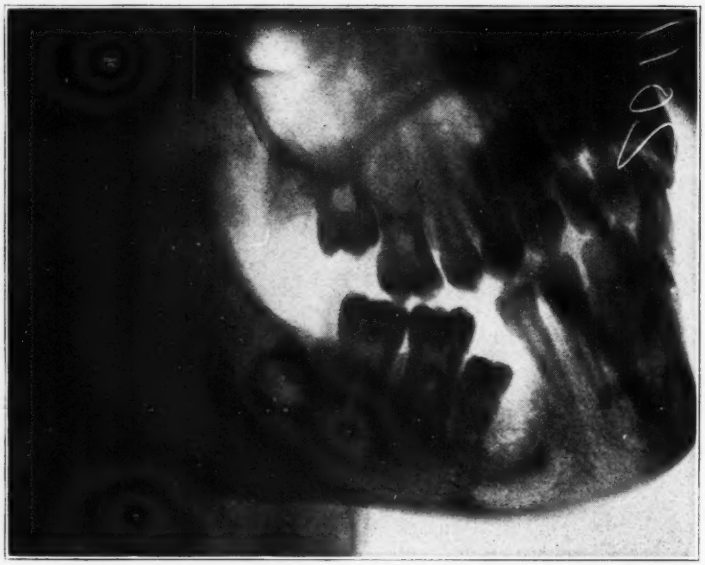


Fig. 7.

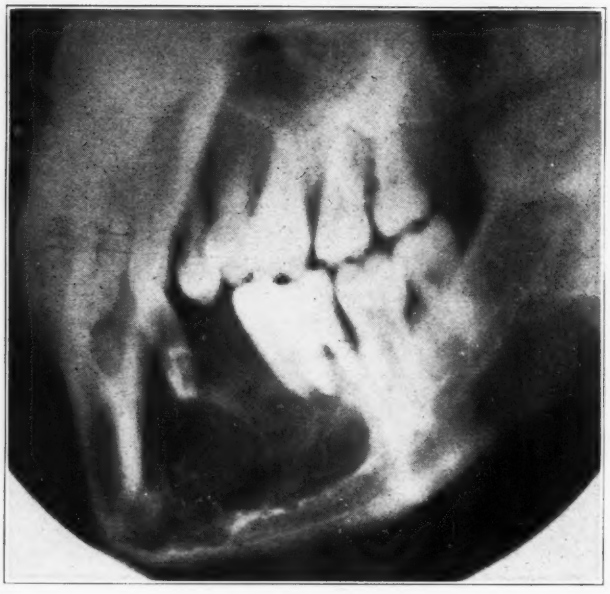


Fig. 8.

About this time she noticed a swelling in the region described, which has been increasing in size up to the present.

Physical examination showed the presence of a growth extending from the lateral incisor to the mesial surface of the second molar. The mucous membrane was ulcerated, due to the maxillary teeth striking this growth. Radiographic findings resembled that of a cyst (Fig. 8).

Under novocaine anesthesia the growth was removed *en masse*.
Fig. 9*A* shows the upper surface of the growth.
Fig. 9*B* the lower surface, showing the capsule.

Fig. 9A.

Fig. 9B.

Fig. 10.

Fig. 11.

Fig. 12.

CASE V.—BONE REGENERATION

The patient, a girl of twelve years, was referred for the treatment of a swelling in the left maxillary region.

Physical examination showed the left maxillary lateral incisor to be extremely loose and sensitive to percussion. The mucous membrane overlying the tooth was swollen and had a peculiar bluish color. There were no systemic symptoms. Radiogram showed extensive rarefication (Fig. 10). The tooth was held in place by ligature wire fastened around the neck and attached to the adjacent teeth, and proper root canal therapy instituted (Fig. 11). A semilunar incision, including the gingival border of the lateral incisor and avoiding that of the adjoining teeth was made, the flap raised and the area thoroughly curetted without the removal of any portion of the tooth. One year later the patient returned and the tooth was found to be perfectly sound and firm and giving the patient excellent service.

Radiogram taken with the result as shown in Fig. 12.

SIMPLE CYST OF THE MANDIBLE*

By Clyde R. Modie, D.D.S., Madison, Wisc.

MR. J. L., aged seventy-three years, came to the Jackson Clinic January 26, 1922, with perforation of the mucous membrane over the lower right jaw. The anterior teeth in the upper and lower maxillæ had been removed about

Fig. 1.

one year before, and all the posterior teeth had been extracted for from twenty-five to forty years. In July, 1921, artificial dentures had been made. When

*From the Section on Dental Surgery, Jackson Clinic.

the patient returned for adjustments of the dentures sometime later a fistula was noted on the ridge of the lower right mandible in the region of the third molar. The probe met no obstruction in the body of the mandible or ramus for considerable distance. There was no history of pain, swelling, or inflammation, and the patient had not experienced discomfort until his attempt to wear the dentures.

Radiographic examination at the Clinic revealed decreased density of cancellous bony structure from the region of the premolars to a point about 3 cm. below the sigmoid notch and involving the angle of the mandible (Fig. 1). As only a thin shell of bone enclosed the cyst, except at the point of perforation, the process was extremely susceptible to fracture. The apical

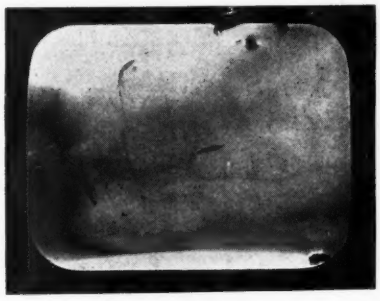


Fig. 2.

third of a tooth root with a filled canal was noted (Fig. 2). Examination of the cystic contents failed to reveal malignancy and a diagnosis of simple cyst of the mandible was made.

January 31, 1922, operation was performed under ether anesthesia. The cavity of the cyst was curetted, cauterized, and packed with iodoform gauze. The wound was dressed daily with iodoform packs for fourteen days. Irrigations with normal salt solution were continued every day for a month to promote granulation and rapid repair.

Radiographic examination in July revealed almost complete regeneration of bone. As is common in cysts of this type, the condition had undoubtedly been developing over a period of many years, and was very likely induced by irritation caused by the infected root end remaining in the tooth socket when the posterior teeth were removed.

CANCER OF THE TONGUE, LIPS AND CHEEK

A Résumé of Recent Literature

By Vilray P. Blair, M.D., F.A.C.S., and Morris J. Moskowitz, M.D.,
St. Louis, Mo.

CANCER OF THE JAWS

CARCINOMA is the most common malignant tumor of the jaw. It involves the lower jaw more often than the upper, while sarcoma affects the upper maxilla more frequently than the lower. There is, of course, no carcinoma primary in the jaw bones themselves. All begin in tissues outside the bone, most commonly in the gums, the alveolar surfaces, the mucous membranes over the upper and lower jaw, or the palate. The adamantinoma is supposed by many to take its origin from dental strands of epithelium. It is a locally malignant tumor but is not counted among the carcinomata. Rohr mentions suppuration of the antrum as a predisposing factor in the causation of cancer of the upper jaw. Schlatter cites a case in which the tumor arose within the body of the lower jaw, probably metastatic from a cancer of the breast that had previously been removed. Ochsner has shown that the most usual location was in the vicinity of the molar teeth. In every one of his cases of cancer of the jaw the teeth were either carious, loose, or by the addition of bridge work and crowns afforded a breeding place for infection.

In general there are two clinical types of carcinoma of the jaws. (1) The ulcerating hard papillary carcinoma, usually appearing on the lower jaw and (2) the soft medullary cancer which is found in the antrum and upon the oral surface of the upper jaw. The symptoms of the two types differ materially. The hard ulcerating type grows more slowly and in the earlier stages causes no pain. It appears first as a small round thickening or ulcer on the gingival mucous membrane with indurated, sharply outlined margins. The induration and ulceration invade the neighboring surfaces much more rapidly than the deep tissues and are usually of a hardness which is unmistakable. The teeth often become loose and fall out. The lymph nodes are invaded earlier in cancer of the lower jaw than that of the upper—and usually the submaxillary and cervical nodes are involved leading to secondary invasion of the bone itself with ultimate erosions through the cheek.

Carcinoma of the central or medullary type is usually brought to the patient's attention by pain. The cause of the pain is not understood, and frequently many teeth are extracted by dentists in a vain attempt to give the patient relief. Usually it radiates to the ear and upward to the vertex. These tumors usually invade the orbit causing bulging of the eye with or without impairment of vision. The malignancy of an advanced medullary or

central carcinoma is shown by the absolute mercilessness with which it invades and destroys all tissues excepting the teeth and the eyeball.

So far as treatment is concerned, some operators favor the destruction of the growth by one of the methods of applying d'athermy on the grounds that (1) shock is less, (2) hemorrhage at the time of operation is absent, (3) lung complications are claimed to be less frequent than after cutting operations. Implantation of malignant cells into healthy tissues cannot occur. The choice of most surgeons at present, however, is early and extensive operation with the cautery, followed by carefully planned after-treatment with x-ray or radium. Occasionally even advanced growths will be cured in this manner. It is of the utmost importance to destroy the growth and the adjoining tissues for a distance of 2 cm. from the edge of the growth with the cautery at the original operation because a partial operation is usually followed by inoperable metastases. Routine postoperative prophylactic radiation is opposed by many because (1) it is time-consuming; (2) it is expensive to the patient; (3) there is the possibility of an inadequate dose which may stimulate the cancer cells instead of checking their growth.

Treatment of cancer of the upper jaw and antrum is a much more serious and difficult matter. Many of these cases are not suitable for surgery alone because it is impossible to go sufficiently wide of the tumor and so Greene advises that "by operation we bring the region involved within the reach of radiation." The reviewers believe that New's method of invading the antrum from within with the soldering iron and following with radium will be followed by the most satisfactory results. The older classical excision of the superior maxilla for carcinoma is a much more mutilating operation and is fraught with greater danger to the patient and has seldom been followed by even a two-year relief.

In primary early operations the mortality is almost nothing, the results are exceedingly favorable, while in late or secondary operations precisely the reverse is true. Cases that have had teeth extracted and partial operations performed before coming under observation according to Ochsner have almost invariably died from inoperable metastases within two years following the original interference. The admonition may be emphasized that "Cancer is best treated like a skunk—let it alone or kill it quick—only grief can come from irritating it."

BIBLOGRAPHY

[1]Ochsner, A. J.: Annals of Surgery, September, 1922.
[2]Rohr, Hans: Ein fall von oberkiefer karzinoms behandelt durch resektion des oberkiefer's Beitr. z. Anat. Physiol. Path. u. Therap., 56, 1918, vii, 38.
[3]Scudder: Tumors of the Jaws, Philadelphia, W. B. Saunders Co.
[4]Blair, V. P.: Surgery and Diseases of the Mouth and Jaws, ed. 3, St. Louis, C. V. Mosby Co.
[5]Blair, V. P.: Tumors of the mouth, Internat. Abst. of Surg., xxii, 117-132.
[6]Greene, D. C.: Carcinoma of the Antrum, Am. Jour. Roentgenol., September, 1922.
[7]Blair, V. P.: Prevention of Carcinoma of the Mouth, Paper before Chicago Dental Society, January 19, 1923.
[8]Gilmer, I. L.: Discussion of Dr. Blair's paper before Chicago Dental Society, January 19, 1923.
[9]Bloodgood, J. C.: Carcinoma of the Lower Lip, Surg., Gynec. and Obst., 1914, xviii, 404.

[10]Bloodgood, J. C.: Cancer of the Tongue, a Preventable Disease, Jour. Am. Med. Assn., lxxvii, 1381.
[11]Bloodgood, J. C.: Treatment of Tumors of the Upper Jaw with the Cautery, a Preliminary Report, Southern Med. Jour., xii, 248.
[12]Crile, G. W.: Carcinoma of the Jaws, Tongue, Cheeks and Lips—General Principles Involved in Operations and Summary of Results at Cleveland Clinic, Surg., Gynec. and Obst., xxxvi, No. 2, p. 159.
[13]Judd, E. S., and New, G. B.: Carcinoma of the Tongue—General Principles Involved in Operations and Summary of Results at Mayo Clinic, Surg., Gynec. and Obst., xxxvi, No. 2, p. 163.
[14]Brewer, George E.: Carcinoma of Cheeks and Lips—General Principles Involved in Operations and Summary of Results at Presbyterian, Memorial and Roosevelt Hospitals, New York, Surg., Gynec. and Obst., xxxvi, No. 2, p. 169.
[15]Mackee: X-ray and Radium in the Treatment of Diseases of the Skin, 1921, Philadelphia, Lea and Febiger.
[16]Simmons, C. C.: Surg., Gynec. and Obst., xxxvi, No. 2, p. 183.
[17]Ewing: Neoplastic Diseases, Philadelphia, W. B. Saunders Co.
[18]Jesset: Quoted by Ewing "Neoplastic Diseases," Philadelphia, W. B. Saunders Co.
[19]Capetti, L.: Traitement chir. de cancer de la tongue, Thése, Paris, 1907.
[20]Quick: Treatment of Carcinoma of the Tongue, Annals of Surgery, lxxiii, 716.
[21]Hazen and Erchenlank: Leukoplakia Buccalis, Jour. Am. Med. Assn., October 28, 1922.
[22]Sistrunk, W. E.: The Results of Surgical Treatment of Epithelioma of the Lip, Annals of Surgery, lxxiii, 521.
[23]Harrison, W. J.: Diathermy in Malignant Diseases of the Mouth and Fauces, Practitioner, cviii, 321.
[24]Pancoast, H. K.: Modern Treatment of Cancer of the Lip, Surg., Gynec. and Obst., xxxiv, 589.
[25]Broders, A. C.: Squamous Cell Epithelioma of the Lip, Jour. Am. Med. Assn., lxxiv, 656.
[26]Taussig, L.: Carcinoma of the Tongue and Its Treatment with Radium, Arch. Dermat. and Syph., vi, No. 4, p. 424.
[27]Pfahler, G. E.: Cancer of the Lip Treated with Electro-coagulation and Radiation, Arch. Dermat. and Syph., vi, No. 4, p. 428.
[28]Lain, E. S.: Treatment of Cancer of the Lip by Radiation, Arch. Dermat. and Syph., vi, No. 4, p. 434.
[29]Boggs, R. H.: Radium Treatment of the Mouth and Throat, Penn. Med. Jour., 1921, xxv, 22.
[30]Broders, A. C.: Basal Cell Epithelioma, Mayo Clinic Reports, 1912.
[31]Butlin, H. I.: Sarcoma and Carcinoma, London, 1882.
[32]Butlin, H. I.: Operative Surgery of Malignant Diseases, London, 1882.
[33]Butlin, H. I.: Diseases of the Tongue, London, 1882.
[34]Butlin, H. I.: On the Early Diagnosis of Cancer of the Tongue, Brit. Med. Jour., 1909, i, 462.
[35]Schlatter: Von Bergmann's System of Surgery, i, 708.

DEPARTMENT OF
DENTAL AND ORAL RADIOGRAPHY

Edited By
Clarence O. Simpson, M.D., D.D.S., and Howard R. Raper, D.D.S.

THE TECHNIC OF ORAL RADIOGRAPHY

By Dr. Clarence O. Simpson, St. Louis, Mo.

REGIONS IN DETAIL

Maxillary Incisor Region

(*Continued from page* 394.)

Position of Head. Occlusal plane of maxillary teeth horizontal

Vertico-horizontal Angle of Projection { Median view, average 38 degrees. / Diagonal views, average 38 degrees.

Modifications. Forty degrees or greater where there is a marked labial inclination of the teeth, or the roots are exceptionally long. Thirty-five degrees or less as the teeth approach a vertical position, or the roots are abnormally short.

Mesio-distal Angle of Projection { Median view directly between the central incisors. / Diagonal views directly between the central and lateral incisors.

Modifications. Compensation for a deflected, nasal septum, or a marked mesio-distal inclination of the teeth.

Placement of Film Packet. Median view. Longer dimension vertically. Upper corners slightly bent. Place packet to include the lateral incisors equally, or equal portions of each canine; incisally to include the incisal edges of the teeth in symmetrical relation to the end of the packet at the predetermined angle of projection.

Diagonal views. Longer dimension vertically. Upper mesial corner bent. Place packet mesially to include 2 mm. of the opposite central incisor and distally to the width of the packet; incisally about 3 mm. below the incisal edge of the central incisor, and 6 mm. below the cusp of the canine.

Retention of Packet. Patient's right thumb, for median and left diagonal views, left thumb for right diagonal view.

Spark Gap. 4 to 4½ inches.

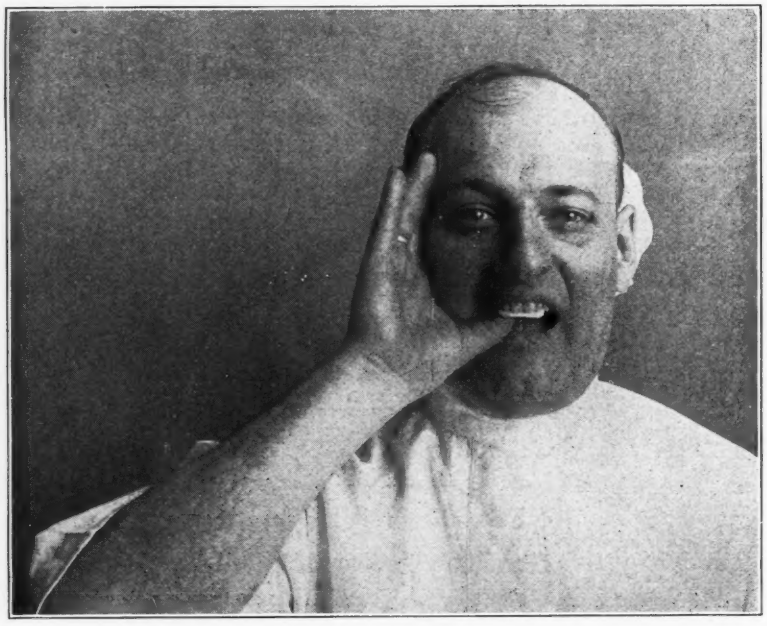


Fig. 1.—Position of the film packet and retaining hand for median view.

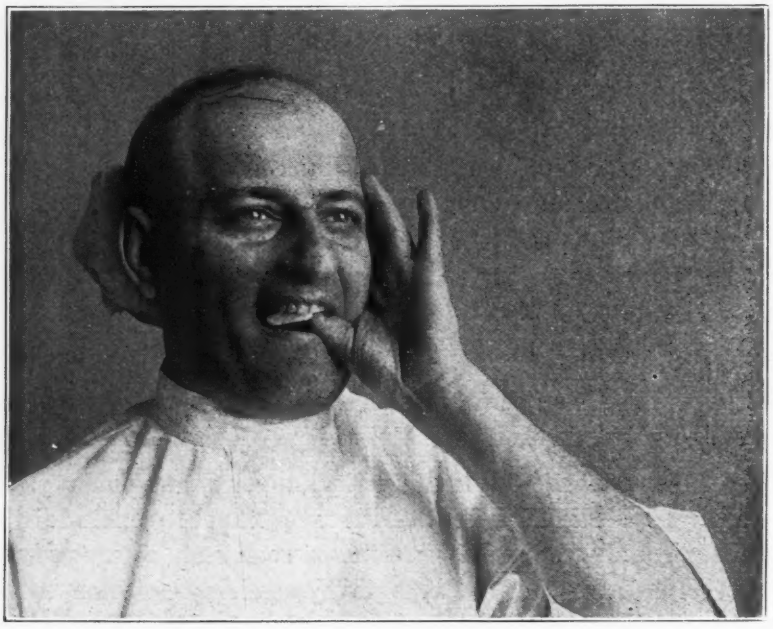


Fig. 2.—Position of film packet and retaining hand for right diagonal view.

Exposure. 120 to 160 milliampere seconds for median view, 90 to 120 milliampere seconds for diagonal views at an 18 inch target-film distance.

Explanatory Description.—More confusing extraneous structures are superimposed on the maxillary incisor region than any other of an intraoral examina-

tion. To exclude these structures in accurately determining conditions, and to compensate for the curve in the dental arch, three routine views of the region are required. This quota should not be reduced because the teeth appear normal. Contrary to the legal assumption regarding the burden of proof, in a radiodontic examination all regions should be suspected until proved innocent.

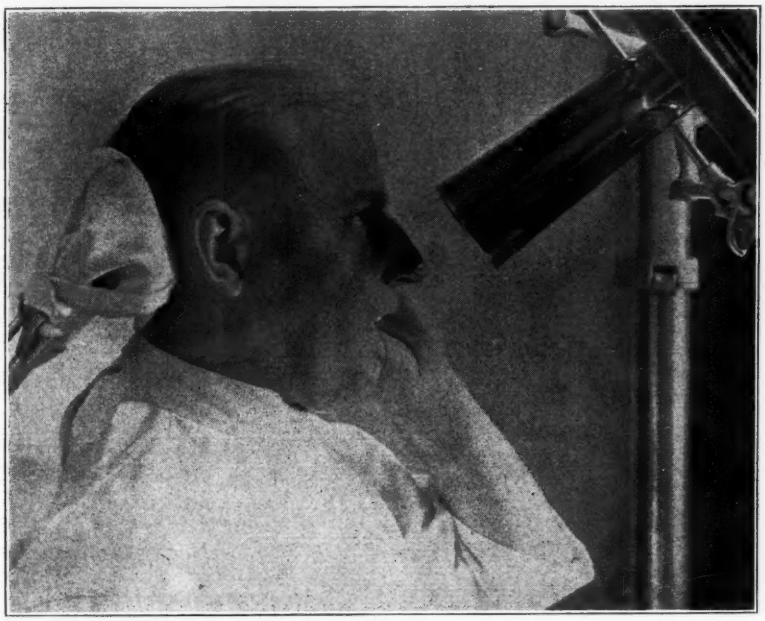


Fig. 3.—Illustration of correct pose with the lip covering the teeth and the average position of the cone.

Fig. 4.—The three routine views of the maxillary incisor region to exclude confusing anatomic structures and distortion from curvature of the arch.

In the median view of the four incisors, which has generally been considered sufficient, the following anatomic perplexities are registered: 1. The soft tissue of the nose, producing an increased radiopacity over the apical area and ending with a curved line of demarcation usually about midway of the roots. 2. The nasal spine and septum producing a marked radiopacity

between and above the central incisors, a deflected septum often obscuring the root of one central incisor. 3. The nostrils, registering radiolucent areas near the apices of the central incisors. 4. The incisive foramen forming an oval

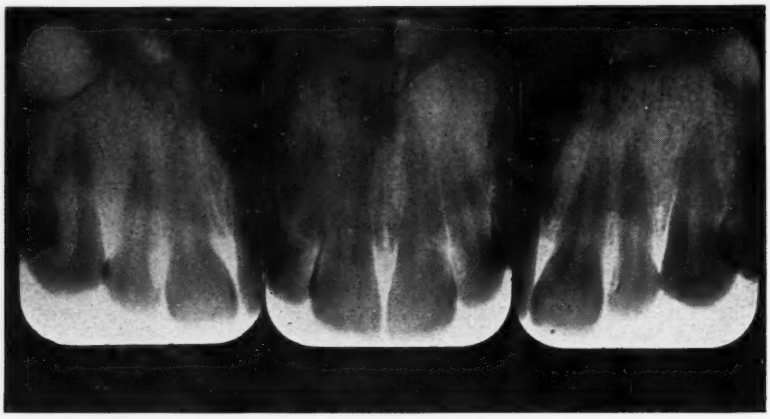


Fig. 5.—A deflected nasal septum which obscures the left central incisor and produces a difference in the radiolucence of the nostrils.

Fig. 6.—Three distinctive types of incisive foramina. The one on the right is characteristic in form, but slightly larger than the average.

Fig. 7.—The nasal spine and septum obscuring in the median view a periapical involvement of each central incisor, which is disclosed in the diagonal views.

Fig. 8.—An unusual formation of the incisive foramen, which might be mistaken for pathologic destruction.

Fig. 9.—The incisive foramen superimposed on the right central incisor in the diagonal view, as demonstrated in Fig. 10. The left central incisor contained a septic pulp, and the bone involvement can be distinguished in all the views. A perforation of the left lateral incisor root is disclosed in the diagonal view.

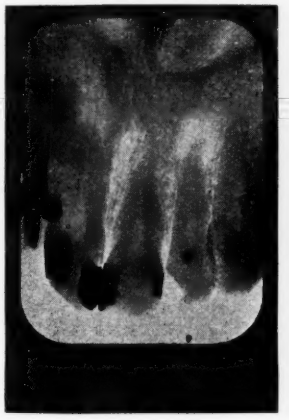


Fig. 10.

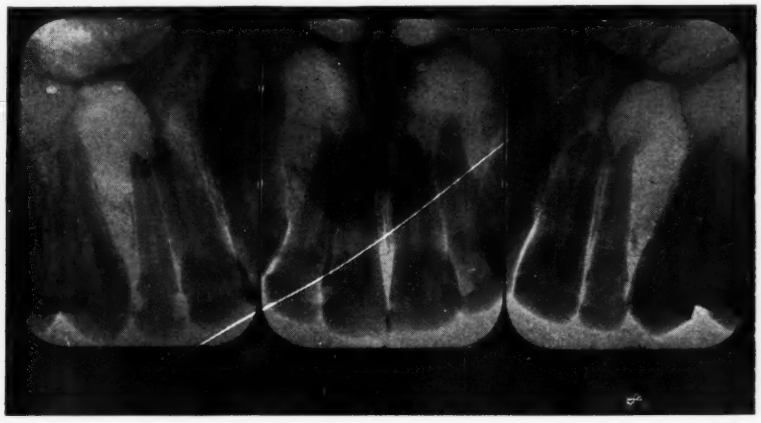


Fig. 11.

Fig. 10.—A modified diagonal view of the case in Fig. 9, to project the incisive foramen away from the right central incisor, the pulp of which is vital.

Fig. 11.—Remarkably similar cystic involvement of the lateral incisors, which in the median view might be mistaken for the radiolucence of the nostrils.

radiolucent area between the roots of the central incisors. 5. The incisive fossae, producing a diffuse radiolucence around the lateral incisor roots.

In the diagonal views the nasal structures are projected away from the side radiographed, but the incisive foramen may be registered near the apex of the central incisor or the ala be superimposed on the apical third of the lateral incisor root.

The form of the nose should be studied in calculating the angle of projection, that the denser portions, especially the septum, will not obscure important areas in the negative. The size of the nose should be considered in reckoning the exposure time, as a variance of 30 per cent is required for the extreme types.

Before the exposure is made, the patient should be requested to let the lip come over the teeth. The words "down," "lower," or "drop," should not be used in this request, because the suggestion often causes a simultaneous movement of the head. When there is a hesitancy in complying with the request, the operator may gently draw the lip over the teeth. The covering of the tooth crowns by the lip increases the resistance to the rays, and to a degree equalizes the greater radioparency of the thin crowns as compared with the other structures.

RADIODONTIC RIDDLES

Conducted by Clarence O. Simpson, M.D., D.D.S.

A Department Devoted to Discussion of the Scientific, Technical, and Ethical Problems of Radiodontia

When the Lamp of Knowledge Splutters

Q.—I have been anxious for some months past to specialize in the practice of orthodontia along with radiography, perhaps you may be able to supply me with some information which I am anxious to secure before taking this step.

As near as I am able to ascertain this specialty of orthodontia seems to be on a rather indefinite hit and miss basis, particularly in regard to the status of the various types of appliances.

One well-known orthodontist whom I interviewed said, "To get the best training, go to the Pacific Coast." The further impression that I get, is that should I do so I would be placed in some sort of a mysterious sacred order of journey-men orthodontists, provided I am able to meet with certain requirements and live up to certain agreements, and would emerge properly oiled and greased and vouched for among a few.

An orthodontist whom I interviewed at the State Meeting held up his hands in holy horror at the above suggestion and said, "Do not secure any single barrel training," as he termed it, but advised me to go in the opposite direction to the Atlantic Coast where it seems according to his viewpoint I would secure everything but my money back and would emerge therefrom an orthodontist of a high order and to be known as such among another faction of the specialty.

Another orthodontist who graduated at a school in the Mississippi Valley told me not to go to either coast, that I did not need salt-water training unless I was going to practice in the Navy Corps, and advised me to follow his example if I wanted practical instruction.

Everything seems to be more or less chaotic. No standards in the specialty. Good men knocking their colleagues, because they use what is in their opinion the wrong appliance, the left-handed monkey wrench or the counter-clock-wise screw thread.

I am placed in a position of not knowing where to take hold, the head or the tail, and furthermore, should I reach the decision to grasp the tail, I am sure from past experiences and interviews the same would be pointed out to me in any section of the United States where I should desire to go.

The next question which arises is in regard to your particular specialty,

radiography. In taking up this work, are the specialists and men who have given this subject the most mature thought and work agreed on its fundamentals? Is the technic being rapidly standardized, etc.? The two specialties, orthodontia and radiography, surely have abundant futures if they are carefully guided and are not allowed to burst of spontaneous combustion.

A.—An interested spectator exposed to the usual noncombatant risk of being shot in the fracas cannot decide the merits of the orthodontic melée. However, the judgment of a ring-side observer, and the evidence of the "pictures" is more reliable than the opinions of the fighter's seconds. Having broken bread and some of the Commandments with orthodontists of different persuasion and profane declaration, the writer may discuss the situation in an irresponsible manner.

After association with a representative of the radical cult who move teeth faster than the whittling "surgical removers," one is led to believe that orthodontists may be classified as the quick or the dead. When this method is mentioned to the opposition, the classification is revised to speed demons, and sane scientifics. The advocates of removable appliances display beautiful jewelry which appeals to the sanitary sense, but the critics insist that the system imposes too great a temptation upon adolescent logic and honor. To briefly continue through the technical dissension, every ribbon has its salesman, every band its drummer, every spur its rider, every thread its nut, and, in confidential knocking, every wire its "crook." The only harmonious sound audible from the orthodontic battle royal is the unanimous condemnation of the advertising lure in the tainted journals of coil springs to correct dental deformities, and mail order orthodontic treatment by laboratory "heelers."

The diversity of methods and the harangue on nonessentials is truly confusing to one seeking preparation for orthodontic practice. When the lamp of knowledge which should guide the student in his chosen science becomes a smudge-pot, it is time for those qualified as tutors to stop "tooting," brush aside the charred ashes of the past, and apply oil where it will do the most good. Since senility and prohibition do not modify the rancor of personal conflict which prevents agreement on technical problems, only natural elimination and a rising generation without fear of ghosts or subjection to patentee tribute offer hope.

Most orthodontists exaggerate the importance of "hardware," and neglect principles. They are so intent upon "lingual" or "ribbon" craft that even the obvious indications for radiography are ignored. The style of harness is inconsequential when a wheel is missing, and likewise the type of appliance when teeth are congenitally absent. With three-fourths of an erupted tooth and all the supporting structures invisible, orthodontists who attempt treatment without routine radiographic examinations are poor mechanics. Mechanical orthodontists must extend their vision not only by the application of radiography, but also pediatrics, to study the child of whom the teeth are only a part.

Regardless of where you decide to acquire your special training, the

result will depend upon your ability and efforts. A postgraduate school in a few weeks cannot magically transform you into an orthodontist. By systematic instruction it offers you that which would require years to learn through undirected plodding, but a complex specialty with the biologic ramifications of orthodontia or radiodontia is a life consecration for an earnest man. Speed the time when a postgraduate training of months instead of weeks will be the legal requirement for the practice of dental specialties. There are too many counterfeit specialists preying upon people with glib monologue patter, a craftily staged act, and the public confidence created by reputable men.

You ask whether the men who have given the most mature thought to radiodontia agree on the fundamentals. Yes, there is accord among the men whom you describe, but they are so few in number that there would not be riot if they violently disagreed. The novices occasionally break into print with a resurrected fallacy, or a premature "bloomer," so do not be misled by the "dabblers" who speak the loudest and most confidently on the subject. There are fundamental limitations to be overcome, many technical details to be perfected, and discrimination in interpretation to be amplified before radiodontia reaches its ultimate usefulness. Radiodontia is in that immature state in which it is talked about and played with by many but only those who love and expect to live with it are studying its development and staying "up nights" with it. However, it is big for its age, makes itself heard, and is going to be a credit to the family. Maiden ladies are addicted to positive opinions and fluent advice on the rearing of children, but they are short on delivery.

To learn, one must have an appreciation of what he does not know and the spirit of a "go getter." You cannot take much from the other fellow except ideas and new lines of endeavor. Imitation will not carry you far without laboring through the process of the originator. For economic reasons you may be compelled to practice both orthodontia and radiodontia, but either is too exacting for divided interest. One will surely be subordinated to a mercenary sideline, with the mental perturbation accompanying sacrificed ideals.

Standardization which you suggest, is often a substitute for brains. It is necessary in industrial lines where the labor of many is required to create the product of a few master minds.

> Standardized men, who for standardized pay
> Do standardized work, in a standardized way,
> Must be content to forego the wealth or the fame
> Which comes to the man with an unstandardized brain.

Principles may be expressed in rules, requirements may be tabulated, technics systematized, but physical diagnosis and treatment cannot be standardized without materially impairing their efficiency.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Reactions of Enamel to Injury and Disease. A. Hopewell-Smith (Philadelphia). The Pacific Dental Gazette, March, 1923, xxxi, 3.

The enamel is an entirely unique tissue structurally, physically and chemically. It is wholly lifeless and may be compared to the shell of an oyster, each of these structures owing its origin to the animal cells known as ameloblasts. It is a calcified epithelial secretion and naturally cannot repair itself after injury. During its development certain general disorders affect the nutrition of the ameloblasts and leave permanent anomalies. It may also be affected by certain changes in the subjacent dentin. It cannot inflame nor be the seat of neoplasms of any kind. The development of enamel cannot be modified by absence of vitamins from the food. Enamel may be affected by attrition, which wears it down in time, and certain chemical changes cause erosion; while mechanical factors like the impact of a toothbrush handle may cause abrasion. It may undergo absorption from the action of phagocytes externally as in the course of circumscribed gingival inflammation and internally in affections of the pulp and may further undergo simple decalcification, also as a result of local circumscribed action of an acid. The structure which most nearly resembles enamel, although widely differing from it in certain respects, is the crystalline lens. Neither contains blood vessels, cells, nerves or connective tissue fibers.

Further Studies of the Effect of Diet upon the Teeth and Bones. P. B. Howe (Boston). The Journal of the American Dental Association, March, 1923, x, 3.

The earlier work of the author had to do not with diet but with the possible effects of bacteria in the production of caries, the organisms being both inoculated and swallowed by the laboratory animals. Germ life alone could not be made to influence the state of the teeth. When variation of the diet was substituted positive results were seen. The animals used were guinea pigs and in the presence of an abundant and balanced diet it was possible to induce caries or a condition resembling it by withholding the antiscorbutic vitamin. The totality of the changes induced comprised de-

calcification of both enamel and dentine with, occasionally, distinct cavity formation, and alveolar absorption with degeneration of the periodontal tissue, the latter followed by lengthening and loosening of the teeth and pus formation. Collateral results were eye troubles, joint affections and susceptibility to infection, with interference with growth and reproduction. Lameness and paralysis develop constantly about the fifteenth day and are associated with hemorrhages into the muscles and calcific deposits on the bones. Despite these lesions the animals are well nourished, eating well and gaining weight. The joint cavity is involved and ankylosis may be present. A little orange juice if given in season will remedy this condition of the locomotor apparatus. While the calcium of the teeth is reduced and this despite a plentiful amount of lime in the diet the amount of magnesium is increased, showing that the vitamin in question is of use in the fixation of lime. Human carious teeth show the same metabolic anomaly. The work is still in progress.

Insanity from Dental Causes.—Editorial in The Dental Surgeon, February 10, 1923, xx, No. 954.

The editor cites two remarkable cases from Australia in which young professional men suddenly developed what appeared to be precocious dementia. They were interned in different asylums and were found to have respectively six and four impacted teeth, removal of which was followed by returning sanity. Since four noted alienists concurred in calling these patients precocious dements, the question of the possible curability of the disease comes up. Dr. William Hunter, the well-known British dentist, has recently referred publicly to the success of organized dental treatment in insane asylums. While a direct connection may not be demonstrable, yet the percentage of those discharged cured has increased since the adoption of the innovation to a noteworthy degree, while at the same time the average sojourn of patients has been shortened. Two possible factors are involved, viz., oral sepsis and peripheral irritation. There is of course danger from overenthusiasm and the dentists are more conservative about the rôle of oral sepsis than the medical men and less prone to extract teeth unnecessarily, if left to their own devices.

Pyorrhea Alveolaris in Rats. B. Gottlieb (Vienna). Vierteljahrsschrift für Zahn heilkunde, 1922, xxxviii, Heft 3.

Erdheim has recently announced that rats are subject to a form of pyorrhea of the molar teeth. It is common for them to shed these teeth under pathological conditions. The author, who is connected with the department of pathological anatomy of the university of Vienna, has examined with the microscope the jaws of about 200 rats by serial section. The first generalization which the author arrived at is that the shedding is due to cumulation of paradental inflammation which in turn is due to the irritation of foreign

bodies, notably hairs. There was no evidence of any primary loss of vitality in the cementum. The hairs, which include those of the animal's body, are not the sole mechanical causes as any kind of debris may be operative in the same fashion; nor need the so-called hair be true hair for it may include hair-like substances, notably those found on oats. An oat diet, in fact, appears to cause a specially severe type of pyorrhea, due in part to injury by the sharp oat grain and in part to the penetration of the so-called oat hairs into the alveoli. Some other factor must furnish a predisposition and one is found in deficiency of the protective epithelial layer, the business of which is to keep foreign detritus out of the alveoli. Just what this deficiency is due to may not be quite apparent at present, whether congenital or acquired. It seems reasonable to believe that this rat pyorrhea is analogous to one type of human pyorrhea having the same causal agencies, but it does not follow that it has any bearing on the other human types. In man we have the so-called filth pyorrhea with marginal atrophy of the alveolar margin, and this may agree with rat pyorrhea.

Mottled Enamel. J. Leon Williams (New York). The Dental Digest, March, 1923, xxix, 3.

This paper is in the main a study of the tinctorial properties of enamel in connection with vital staining. The author touches on the condition known as "Mottled Enamel" which is of interest in showing that this tissue, once thought to be impermeable to staining agents, is in reality freely permeable to several stains. The disease in question is an endemic dystrophy which occurs among other localities in Colorado. The stained teeth have in general a dead white or milky appearance which accentuates the brown discoloration, the latter being present in spots or bands. The deciduous teeth seem immune and the permanent teeth are not attacked until half or more of the enamel has been formed. As a result the whole tooth is not discolored but a third to a half. The defective enamel may be readily stained by eosine and nitrate of silver. Histological study shows that the defect is one of imperfect calcification, especially of the cement substance. The resemblance of mottled enamel to caries is striking and the mechanism must be similar to the extent that in caries there is decalcification due to the action of acids. The sole difference lies in the fact that in mottled enamel the original deposition of lime salts has been interfered with. The author has been collecting slides of mottled enamel since 1909 and has become recognized as the leading authority on this subject. A puzzling fact is that mottled teeth show no unusual tendency to ordinary caries, which shows that the two conditions however similar are quite unrelated.

Control and Prevention of Caries. U. G. Rickert (Ann Arbor). The Journal of the National Dental Association, March, 1923, x, 3.

Despite the evidence that a clean mouth is the chief resource in the prevention of dental caries the fact remains that cleanliness is at best a relative term. Decay takes place now and then in mouths which to all in-

tent are clean. The fact that aboriginal peoples who do not practice mouth hygiene are relatively immune to caries is not an argument against cleanliness because caries is the disease of civilized and white races. Many dentists are openly skeptical of the power of cleanliness in combating caries. Drugs are of little service in the prophylaxis of this affection but a tooth wash which is pleasant to use and fragrant conduces to mouth hygiene and the alkalies, antiseptics and astringents which are the important constituents of dentifrices seem to be rationally indicated. For nearly a century nitrate of silver has had a repute in the prevention of caries and were it not for the discoloration produced by solutions of this metal it would doubtless receive much more attention than is the case at present. Silver is used both before and after caries has actually developed, in the first case upon susceptible areas, and recently in the interest of experiment on perfectly sound teeth. It has been shown that teeth which have been immersed in silver solution and then exposed to direct sunlight resist the action of acids, the enamel being no longer permeable. Copper may be used in place of silver in these experiments. Some of the causes of caries are still unknown and it has been attributed to disturbance of the calcium-phosphorus metabolism. Thus far dietetic measures are not known to have prevented caries on a large scale.

Butyn as a Local Anesthetic in Dentistry. W. M. Beaumont (London). The Dental Surgeon, March 3, 1923, xx, No. 957.

The author is an ophthalmologist, but his report covers the use of butyn in all regional anesthesia. This synthetic substitute for cocaine is of course an American product originated by Adams and Kamm of the University of Illinois in 1918. It was first used as a dental anesthetic in Chicago in March, 1921, and after a trial material of 100 cases had been tested, it was distributed to a large number of dentists throughout the country in order to obtain a consensus of opinion as to the indications, proper concentrations for use, safety, etc. Several hundred dentists tested the remedy on a material estimated at 10,000 dental operations, comprising the methods of infiltration, blocking, topical application, pressure anesthesia, pulp anesthesia, etc. The optimum dose seems to be 10 drops of a ½ per cent solution injected on the opposite sides of tooth and with or without adrenaline. After sixty seconds one may extract. Thus far no untoward symptoms have been recorded. The author, who is bringing butyn to the attention of the British, states that thus far he has succeeded in inducing but one dentist to make a trial of butyn, but after three months' trial he is now using the new synthetic exclusively. In passing it may be mentioned that the author is using the drug in his ophthalmological practice, in his operative work on the eye, with distinguished success, from 2 to 5 per cent solutions being required. He has used no cocaine for the past nine months. Butyn ought to be a help in the antinarcotic crusade as it seems to render cocaine wholly unnecessary. It is not itself habit-forming.

The International Journal of Orthodontia, Oral Surgery and Radiography

PUBLISHED THE FIFTEENTH OF EVERY MONTH BY

THE C. V. MOSBY CO., 801-809 Metropolitan Bldg., St. Louis, Mo.

Foreign Depots—*Great Britain*—Henry Kimpton, 263 High Holborn, London, W. C.; *Australasia*—Stirling & Co., 317 Collins Street, Modern Chambers, Melbourne; *India*—"Practical Medicine," Egerton Street, Delhi; *Porto Rico*—Pedro C. Timothee, Rafael Cordero 68, San Juan, P. R.

Subscription Rates.—Single copies, 75 cents. To anywhere in United States, Cuba, Porto Rico, Canal Zone, Mexico, Hawaii and Philippine Islands, $6.00 per year in advance. Under foreign postage, $6.40. Volume begins with January and ends with December of each year.

Remittances—Remittances for subscriptions should be made by check, draft, postoffice or express money order, or registered letter payable to the publishers, The C. V. Mosby Company.

Contributions—The editor will be pleased to consider the publication of original communications of merit on orthodontic and allied subjects, which must be contributed solely to this journal.

Opinions—Neither the editor nor the publisher hold themselves responsible for the opinions of contributors, nor are they responsible for other than editorial statements.

Reprints—Since it is not desirable to hold type standing longer than absolutely necessary, all requests for reprints should be made at time of submitting manuscript for publication. Rate card will be sent with galley proof.

Communications—Contributed articles, illustrations, letters, books for review, and all other matter pertaining to the editorial department should be addressed to the Editor, Doctor Martin Dewey, 501 Fifth Ave., New York City. All communications in regard to advertising, subscriptions, change of address, etc., should be addressed to the publishers, The C. V. Mosby Company, 801-809 Metropolitan Building, St. Louis, Mo.

Illustrations—Such halftones and zinc etchings as in the judgment of the editor are necessary to illustrate articles will be furnished when photographs or drawings are supplied by the authors of said articles.

Advertisements—Objectionable advertisements will not be accepted for publication in this Journal. Forms close first of month preceding date of issue. Advertising rates and sizes on application.

Change of Address—The publishers should be advised of change of subscriber's address about fifteen days before date of issue with both new and old addresses given.

Nonreceipt of Copies—Complaints for nonreceipt of copies or requests for extra numbers must be received on or before the fifteenth of the month of publication; otherwise the supply is apt to be exhausted.

Entered at the Post Office at St. Louis, Mo., as Second-Class Matter.

EDITORIALS

The Pledge of the American Society of Orthodontists

AT the last meeting of the American Society of Orthodontists a pledge was adopted which had been recommended by a committee previously appointed.

The original report of the Committee consisted of a Pledge which contained some objectionable and dangerous material which was eliminated before the pledge was voted on by the Society.

The Pledge of the American Society of Orthodontists, like most pledges, contains a large number of flowery sentences. After they are analyzed, they contain nothing that is not already described in the Code of Ethics in the American Dental Association. We believe that every member of the Amer-

ican Society of Orthodontists has adopted a pledge of his own which contains everyth'ng the Society has recommended and in certain instances a great deal more. For the benefit of our readers who were not present at the meeting of the Society we here publish the pledge as adopted:

"WHEREAS: The American Society of Orthodontists seeks to exemplify, enforce and develop the highest traditions of our calling,

"I HEREBY, pledge myse'f as a condition of membership in the Society to live in strict accordance with all principles, declarations and regulations. In particular, I pledge myself to pursue the practice of Orthodontia in a conscientious manner and to place the welfare of my patients above all else; to render willing help to my colleagues and to be considerate of needy patients; to advance constantly in knowledge by the study of Orthodontic literature. interchange of opinions with associates and men of experience and by attendance of our annual meeting; to regard scrupulously the interest of my professional brothers, and to seek their council when in doubt of my own judgment.

"MOREOVER: I pledge myself to shun unwarranted publicity, dishonest money seeking and commercialism as disgraceful to our profession; to make my fees commensurate with the service rendered and with patients' rights."

A careful reading of the pledge shows nothing revolutionary. We can but wonder what interpretation could be placed upon that portion of the pledge which says, "By attendance of our annual meeting." Is that to mean every member pledges himself to attend the annual meeting, and if he does not attend that he violates his pledge? The second paragraph contains something which no one has attempted to explain, "I pledge myself to shun unwarranted publicity, dishonest money seeking and commercialism as disgraceful to our profession." Just what is meant by the dishonest money seeking and commercialism? Are we to imply that certain members in the American Society are guilty of the above crime? If they have not been guilty, why was such a "kind word" inserted in the pledge? We believe the committee of the Society shou'd inform us as to what is meant by the "dishonest money seeking and commercialism."

A few years ago, the American Society amended their By-Laws so as to prevent Members of the American Society from paying commissions to men who referred patients to them.

We believe the paying and offering of commissions could be classed as "dishonest money seeking and commercialism," but as such acts are prevented by the By-Laws, why refer to them in the pledge? Possibly the committee had in mind what the American Medical Association thought of when they wrote their Code of Ethics so as to prevent any member from obtaining a patent or receiving royalties from the sale of any appliance or device used for the treatment of human suffering and deformities. However, if the committee believed that the obtaining of patents was unethical and to be condemned it would have been better if they had spoken it in plain words which could not be misunderstood rather than in talk of "dishonest money seeking and commercialism." While we are not prepared

to say that the obtaining of a patent and collection of royalties from the manufacture and sale of an article used in the treatment of human suffering or deformities is "dishonest money seeking," we do believe that it is "commercialism."

We are very glad to see that the American Society has made a step forward in attempting to eliminate this evil practice of obtaining patents even though they are content at the present time to only speak of such acts as "commercialism."

OBITUARY

Dr. Calvin S. Case

CALVIN S. CASE, M.D., D.D.S., F.A.C.D., was born in Jackson, Michigan, on April 24, 1847; he died at his home in Kenilworth, Ill., on April 16, 1923.

His activities in the dental profession made him one of the best known men. His reputation and work in the orthodontic profession is too well known to need any comment. It was my privilege to know Dr. Case during my entire professional life and during the last few years my duties as editor brought me in close contact with him. It has never been our privilege to examine articles that have been prepared with more careful detail or which presented the subject better than those prepared by Dr. Case. His writings have been many and he was always very convincing in his statements. Many times I did not agree with Dr. Case, but his wonderful nature was revealed by the fact that even though you disagreed with him on a scientific question, he always remained your friend and believed that you had the same right to your opinion that he wished you to allow him to have to his.

We know of no one who prized personal friendship higher than Dr. Case. He was always doing something to show the appreciation he held for his friends. Those who knew him best will remember the many little sacrifices he made, the many dinners he arranged simply for the purpose of entertaining those he loved. To him, friendship was the greatest jewel of life and was not to be sacrificed on the altar of scientific discussion or differences of opinion. He realized that certain questions were not yet solved and could be solved only by men frankly stating their differences and then trying to arrive at the truth.

Dr. Case's early life was spent in Michigan. He graduated from Fayette High School in Jonesville, Mich., 1863. On April 24th, of the same year, he entered the service of his country in the Civil War. At the close of the war in 1865, he commenced the study of dentistry with Dr. Stone of Jonesville. He was soon afterwards associated with Dr. J. A. Robinson, commonly known as "Uncle Jerry," in Jackson, Michigan, and in January, 1867, became his partner in business.

Dr. Case was married to Miss Florence Baxter of Jonesville, on July

9, 1868, and was graduated from the Ohio Dental College in the spring of 1871. Son after he graduated, he started to practice in Jackson, Michigan, where he remained for several years. In 1881, he accepted a position as Demonstrator of Prosthetic Dentistry in the Dental Department of the University of Michigan, and graduated from the Medical Department of that institution in the spring of 1884.

He was President of the Michigan State Dental Association in 1889, and re-elected in 1890. He accepted the position of Professor of Prosthetic Dentistry and Orthodontia, in the Chicago College of Dental Surgery in 1890, and delivered the Doctorate Address to the Graduating Class of this Institution in 1891. He was President of the Chicago Odontological Society in 1895. He resigned the Chair of Prosthetic Dentistry in the Chicago Dental College, and in 1896 became the Professor of Orthodontia in the same institution. In 1897 he held the Chair as Professor of Orthodontia in the Western Reserve University Dental Department at Cleveland, Ohio.

Dr. Case was a member of many clubs and social organizations. One of his principal recreations was billiards and pool and for a number of years he was considered the best billiard and pool player in the Chicago Athletic Club. The accuracy and skill which he developed as a billiard and pool player was also carried to his outdoor activities, as he was an excellent rifle shot and a great enthusiast of archery. At his home in Kenilworth he had arranged an archery in the back yard with two targets where he could shoot at one target, walk over to the first target and retrieving his arrows would shoot them back to the second target, which saved a great amount of energy and steps. At his summer home on Hamlin Lake, Ludington, Michigan, he had also arranged an archery in the woods, where he spent considerable time. Boating was also a favorite recreation. He spent much of his summer months during his latter years at his home on Hamlin Lake, enjoying his boats and woods. When at home in Kenilworth, on nice mornings, he would rise early, go out into the yard, watch the birds for which he had built a number of homes in the trees, and shoot in his archery before going to his office.

As near as can be estimated Dr. Case has published somewhere in the neighborhood of a hundred articles on dental subjects and his principal ones of which are here appended:

"Results Obtained in Two Otherwise Hopeless Surgical Cases Through the Action of Orthopedic Force Upon Cicatrical Tissue."

"The Question of Extraction in Orthodontia."

"Principles in Orthodontia."

"The Velum Obturator for the Mechanical Correction of Cleft Palate."

"Mechanical Correction of Cleft Palate."

"The Bodily Movements of Teeth in Orthodontia."

"A Discussion of Dr. Edward H. Angle's Recent Methods."

"Modern Principles and Methods in Orthodontia."

"A Case From Practice."

"Simplified Technic for Bodily Labial Movement."

"Open-Bite Malocclusion, Its Causes and Treatment."

"The Foundation Principles in the Mechanism of Speech, and the Importance of Training the Speech of Cleft-Palate Patients After Operation."

"Etiologic Principles of Malocclusion in Reference to Treatment."

"Dental-Occlusal Classification of Malocclusion."

"Principles of Retention in Orthodontia."

"Finishing and Polishing Inlays."

"Mouth Breathing."

"A Remarkable Bodily Movement of the Teeth."

"Principles of Retention in Orthodontia."

"Etiologic Influences of Deciduous and Erupting Permanent Teeth with Principles of Treatment."

"Laws of Biology Regarded as Etiologic Factors in Malocclusion."

"Heredity and Variation Ethnologicaly Considered."

"Practical Application of Biologic Laws."

An address delivered by Dr. C. N. Johnson at the funeral services follows:

"My friends: I have been asked to do that for the deceased which I am sure he would willingly have done for me. I have been asked to say something at this time on behalf of the members of the profession which he loved so well. We have met to pay our tribute of love and loyalty, of comradeship and comfort, of hope and heart-felt homage.

"In the realm of what we call a human life, there is no throne like that of love, no scepter like that of loyalty.

"A man is remembered not so much by the fame he has won, not so much by the reputation he has made, not so much by the power he has wielded, or the place he has attained in the affairs of the world. All of these sink to nothingness compared with the good he has done, and the friends he has made and kept.

"In the flotsam and jetsam of our experience, in the ebb and flow, in the ceaseless throb and beat of life, we test the souls of men in the alembic of their constancy and truth. Measured by this, the memory of our dear departed friend will linger long in the minds and hearts of his fellowmen.

"Nature was kind to Calvin Case. She endowed him with that wondrous wealth of skill and art which make of him the genius that he was. He waved the magic wand of hope across the deformed faces of little children, and wrought a miracle of symmetry and grace. He reached down into the nethermost depths of disfigurement and despair, and raised the hopeless one into the dawning of a better day. He brought joy into the darkened home of many a morbid child, and lightened up the latter days of many a mother's heart.

"He caused the sad to smile, the dumb to speak, and the despondent to turn their faces toward the glowing light.

"Calvin Case was a benefactor to his race, and on into the dim and distant future of the days to come, his name and fame will travel far and wide wherever the mouths of children are deformed, and mothers' hearts are sad.

"We, his friends, have come today to lay our laurel wreath of love beside his sacred form.

"We commit back to the elements whence it came all that is mortal of our beloved friend. We carry in our hearts the real and true—the memory of loving deeds and cherished hours—of cheer, and hope, and helpfulness, and happiness—all there is of goodness and grandeur, of love and light, between the dawn of human day and the night that we call death."—M. D.

ORTHODONTIC NEWS AND NOTES

Alumni Society of the Dewey School of Orthodontia

The Thirteenth Annual Meeting of the Alumni Society of the Dewey School of Orthodontia was held at the Edgewater Beach Hotel, April 12-13, 1923. The following program was carried out:

Thursday, April 12, 1923

9:00 Meeting of the Executive Council.
9:30 Meeting called to order, reading of minutes and the usual business as directed by the Secretary.
10:00 President's Address. By Dr. George B. Crozat, New Orleans, La.
11:00 The Inheritance of Pathological Conditions of the Teeth or Malposition and Abnormalities of Teeth and Jaws. By Prof. M. F. Guyer, University of Wisconsin, Madison, Wis.
2:00 Problems that Arise in the Conduct of an Orthodontic Practice. By Dr. Landis H. Wirt, South Bend, Indiana.
3:00 Peculiarities Characteristic of Metals and Alloys for Orthodontic Purposes. By Mr. F. Maeulen, Newark, N. J.
4:00 The Ribbon Arch, the Lingual Arch and Removable Appliances with Illustrations and Combinations of Appliances. By Dr. H. C. Pollock, St. Louis, Mo.
7:00 Alumni Banquet, Black Cat Room, Edgewater Beach Hotel.

Friday, April 13, 1923

9:00 "Family Fair" (Exhibition of Appliances and Case Reports).
Case Report Showing the Use of the Respiratory Shield. By Dr. Donald S. Sterret, Erie, Pa.
Removable Lingual Arch Showing Extension Lock Attachment. By Dr. W. A. McCarter, Topeka, Kans.
Correction of Frenum-Labii by Wire Extensions from an Appliance Fastened to the Teeth. By F. C. Rodgers, St. Louis, Mo.
A Band and Locking Device. By Dr. Joseph E. Johnson, Louisville, Ky.
Case Report Showing New Lingual Lock. By Dr. Adelbert Fernald, Boston, Mass.
My Method of a Quick, Clean, Impression for Study and Work Models, Using Modeling Compound. By Dr. Jesse F. Keeney, Quincy, Ill.
A Simple Method of Replacing Missing Anterior Teeth During the Period of Treatment and Retention. By Dr. P. G. Spencer, Waco, Texas.
Half-Buccal Alignment Wire in Combination with Lingual Arch Wire, Showing Case Treated. By Dr. William C. Fisher, New York, N. Y.
11:00 The Principles in Regard to the Regulation of Children's Teeth. By Dr. Calvin S. Case, Chicago, Ill.
2:00 The Evolution of the Deciduous Molar. By Dr. Martin Dewey.
3:00 Election of Officers.
Final Business Session.
Report of the Trustees of the Dewey Alumni Clinic Fund.
Installation of New Officers.
Adjournment.

Notes of Interest

Dr. James C. Allan formerly associated with Dr. J. Lowe Young announces that he is now located at 116 West 59th Street, New York, N. Y., for the practice of orthodontia exclusively.

Dr. A. B. Conly announces the removal of his office to suite 406 Medical Arts Building, Dallas, Texas. Practice limited to orthodontia.

Dr. T. M. Robertson announces the removal of his office to 824 Walnut Street, Coffeyville, Kansas. Practice limited to orthodontia.

Dr. W. E. Stoft announces the removal of his office to 817-818 City National Bank Building, Omaha, Nebr. Practice limited to orthodontia.

Dr. John R. Ricker announces the removal of his office to Suite 926 Bankers Mortgage Company Building, corner Main and Capital, Houston, Texas. Practice limited to diseases of the mouth, oral prophylaxis and the removal of teeth.

Dr. Archie B. Brusse announces the removal of his office to Suite 500-502 Metropolitan Bldg., Denver, Colo. Practice limited to orthodontia.

Railroad Rates to the Cleveland Meeting

All railroads in the United States and Canada will sell round-trip tickets at one and one-half fare, on the "Identification Certificate Plan," instead of the "Certificate Plan" used heretofore.

One of these Identification Certificates, with instructions, will be mailed to each member of the American Dental Association in ample time for the meeting.—D. C. Bacon, Chairman Transportation Committee.